ISASC

EQUILIBRIUM

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

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Cover Picture

Essington Newell Gilfillan was issued at least 10 patents for scales between 1883 and 1916. Some of these scale patents were for common bow-front spring scales while others were for unusual scales like the one featured on the cover.

Patent number 642321 was issued to Gilfillan on January 30, 1900, for a spring scale without a rack and pinion. The scale is made of cast iron with an aluminum top chart and a coated paper lower chart. The semi-circular lower chart computes prices up to $1.80 for up to three pounds of goods while the upper arched chart weighs by the ounce up to a full capacity of 6 pounds. The scale measures 16¾" long, 5" wide and is 12" tall including the scoop.

Read more about Gilfillan and his scales on pages 3672-3684. Jack Mickevich Collection.

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Chondrometers

BY DIANA CRAWFORTH-HITCHINS

Estimating the quality of grain by measuring its weight and volume

Chondrometers, grain scales, or corn scales, kits to assess grain, that used a known percentage of a bushel of grain, to weigh a sample, and calculate the weight of the whole bushel.

Chondrometers were used by representatives of grain wholesalers who visited farms to buy grain, by farmers to check the prices they would receive for their crop, by bakers' suppliers, by Excise officers calculating the tax on a shipment, and by brewers using barley in their recipes. By calculating the weight of a bushel of whatever grain was in the sample, the quality of the crop could be ascertained. See the list of grains commonly grown in England, Figure 11. Books of tables then provided a quick way of deciding the purpose to which the grain would be put, what to charge for the fattest grains and to whom the crop would be sold.[1]

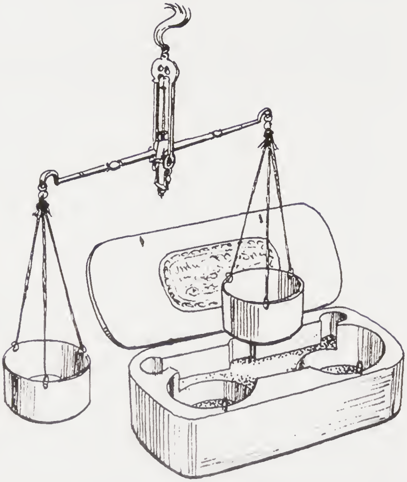


Figure 1a. ↗↗ Made by John Snart I (1693-1738), a fruitwood box cut-from-solid. The style of scale beams changed around 1700, this being the later style with a round pointer and a round section beam. It can be dated by the label, Figure 1b.

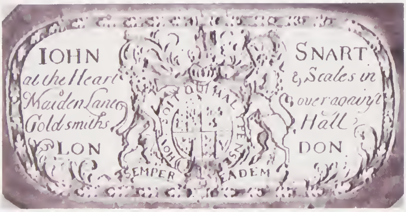
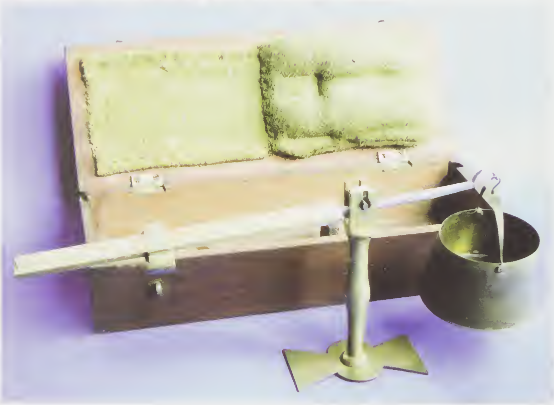


Figure 1b. ↖↖ Trade card of Iohn Snart I. He had the printer's block altered when Queen Anne adopted a new motto, "Semper Eadem" in 1707. When George I came to the throne in 1714, the motto reverted to "Dieu & Mon Droit", thereby dating the scale to 1707-1714.



When purchasing a chondrometer, the buyer could choose the capacity of the bucket. The larger the bucket was, the more accurate the calculation, but the more inconvenient for transportation. The Americans conventionally used a bucket of two, four or even eight pints, but the British used buckets of less than one

Figure 2a. ↖↖ Anonymous chondrometer probably made between 1740 and 1780. English scale makers used green baize during this period. They regularly used sheep's wool to pad silk linings in coin scales, but padding baize is very unusual. However, it is very effective in holding the metal parts firmly. It has three other unusual features that suggest an early date; the double wedge-shaped base to the pillar, a curved poise and a tapered bucket (¼ pint).

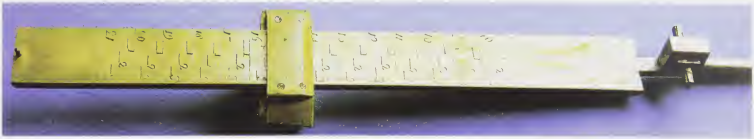


Figure 2b. ▲▲ Anonymous beam, showing the graduations 8-21 on diagonal lines. These are units of ¼ stones or 3½ lbs. The intermediate marks are for 1 lb, 2 lbs and 3 lbs. One other such set of graduations is known.

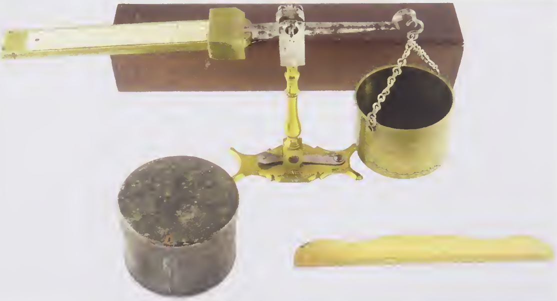


Figure 3. ▲▲. Chondrometer made by W Packer, with graduations from 100-304.

pint. The smallest bucket measured only ¹/₈ pint, so that the slightest error in filling the bucket would be magnified by 256 when considering the contents of the bushel. After doing some experiments with an ¹/₈ pint bucket, I could alter the results by 10% without appearing to be falsifying them! By pouring the grain into the tiny bucket from a greater height, tapping the bucket gently to settle the grain, then striking it with a sloping

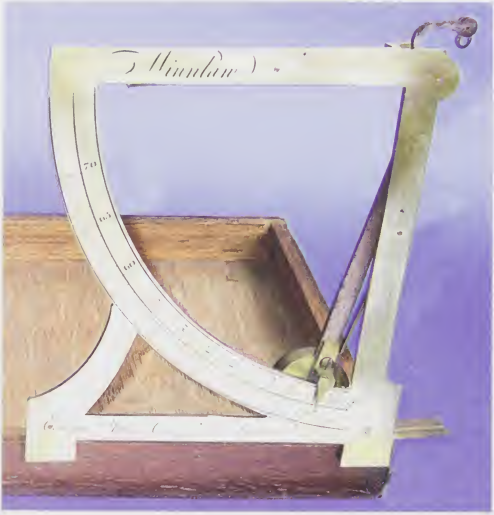


Figure 4a. ◄◄ Pendulum chondrometer by William Winlaw (spelled Winnlaw on the silvered brass). The heavy-gauge ½ pint bucket (now missing) hung below the level of the box, so the box (or platform, as it is designated in the instructions) had to be at the edge of the table. As the slit in the brass tab (at the bottom right) is so narrow, the cord must have been plaited horsehair. The hair was originally tied to the ring at top right, so that the loaded bucket would pull down the arm that rotated about the fulcrum hidden behind the brass right-angle about an inch away from the ring. This action pulled up the poise and the pointer until equilibrium was reached. If the bucket was jerked, the swinging arm of the poise hit long flexure springs used as stops at the top or at the bottom, a nice refinement. I found it almost impossible to read the graduations when testing it. Not having a lit candle, I had to crouch down below the level of the table to get a shine on the arc.

Figure 4b. The instructions were hand-written, so possibly not many chondrometers were made by him. The name was spelled '*Winlaw*' on the instructions, but engraved '*Winnlaw*' on the brass. His book was published with the spelling '*Winlaw*'.

blade to compact the grain very slightly, the reading went from 52½ lbs per bushel to 59½ lbs per bushel. That would suit the crooked user nicely!

The earliest English chondrometer known is a tiny one with a 5" beam, made by John Snart I. (1693-1738) scale-maker to Queen Anne and to the Mint.[2] See Figures 1a & 1b. Because he used the Queen's modified Coat of Arms on the label, it can be dated to between 1707 and 1714.

Winlaw's Corn Balance

For weighing a proportionate part of a Bushell of any sort of grain by pointing on the Index the due weight of the Bushell which shews its quality instantly. The Graduations are set from 25 to 70 which are the greatest & least weight that a Bushell of Corn can weigh. The Instrument must be used with its original measure which is the 128 part of a Bushell. If another Cup is used heavier or lighter it will hinder the accuracy of the Instrument, it being adjusted & graduated by the weight of the measure. The screws in the platform are for fixing the Balance upright & is discovered by the line from the cup acting as a plum-line to the upright line of the Instrument. Engine Maker, Margaret Street Cavendish Square.

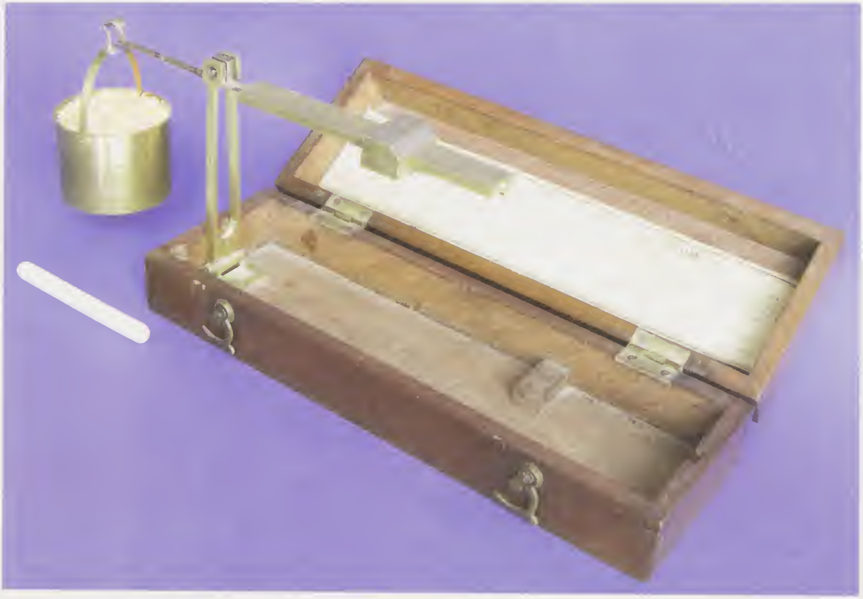
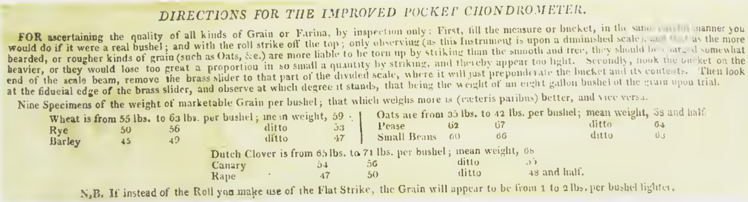


Figure 5. Improved Pocket Chondrometer made or retailed by Isaac Bradford, (1794-1822) nautical, mathematical and optical instrument maker. The design of pillar, fixed permanently to the box by a hinge, is different from the standard version made by John Snart II. Making the roller out of ivory is also unusual. The loaded ½ pint bucket collapsed the pillar and beam down into the box unless the user was very careful. The method of storing the bucket on top of the beam is unusual. Bradford styled himself "Maker" on the poise. Perhaps he really was the maker. Two examples are known, one engraved Bradford, Maker, 136 Minories, London, and one engraved T Parkes, London.



DIRECTIONS FOR THE IMPROVED POCKET CHONDROMETER.

FOR ascertaining the quality of all kinds of Grain or Farina, by inspection only: First, fill the measure or bucket, in the same careful manner you would do if it were a real bushel; and with the roll strike off the top; only observing (as this Instrument is upon a diminished scale), and that as the more bearded, or rougher kinds of grain (such as Oats, &c.) are more liable to be torn up by striking than the smooth and free, they should be charged somewhat heavier, or they would lose too great a proportion in so small a quantity by striking, and thereby appear too light. Secondly, hook the bucket on the end of the scale beam, remove the brass slider to that part of the divided scale, where it will just preponderate the bucket and its contents. Then look at the fiducial edge of the brass slider, and observe at which degree it stands, that being the weight of an eight gallon bushel of the grain upon trial.

Nine Specimens of the weight of marketable Grain per bushel; that which weighs more is (cæteris paribus) better, and vice versa.

Wheat is from 55 lbs. to 63 lbs. per bushel; mean weight, 59.
Rye 50 56 ditto 53
Barley 45 49 ditto 47

Oats are from 35 lbs. to 42 lbs. per bushel; mean weight, 38 and half
Pease 62 67 ditto 64
Small Beans 60 66 ditto 63

Dutch Clover is from 65 lbs. to 71 lbs. per bushel; mean weight, 68
Canary 54 56 ditto 55
Rape 47 50 ditto 48 and half.

N,B. If instead of the Roll you make use of the Flat Strike, the Grain will appear to be from 1 to 2 lbs. per bushel lighter.

Figure 6. ➹➹ This label is in a box with a Benjamin Payne chondrometer. The labels stuck into many boxes were anonymous. The name appeared only on the poise or the beam, beautifully engraved. At this pre-1826 period, the grain that gave the most trouble was oats. After 1826 references were made to other troublesome grains.

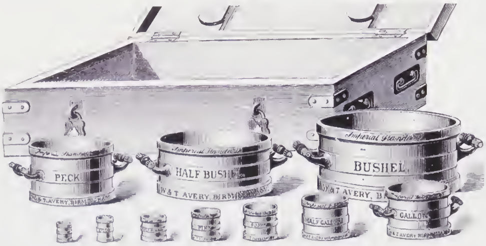


Figure 7. ➹➹ The 1826 Act specified the exact volume and proportions of the Imperial Bushel. The British adopted this, although, with the paucity of inspectors, no doubt the change from the Winchester bushel to the Imperial Bushel was gradual. There was a sudden huge demand for new sets of bushel measures and their binary subdivisions, from 64 pints (one bushel) down to an ⅛ or a 1/16 of a pint. The smallest one shown here is ⅛ pint, the same size as the bucket on many chondrometers. Bushel measures were ruggedly constructed of copper alloy (variously described in the catalogues as bronze, gun-metal or brass) and were exceedingly heavy. They were still in high demand by Inspectors Of Weights & Measures when the Standards Department of Board of Trade took over responsibility in the 1860s.

Unfortunately the weights are missing, but we deduce that grain was put into the ⅛ pint bucket and the weights would inform the user of the lbs per bushel. Alternatively, the weights gave the precise weight of the grain, and a Table was used to multiply by 256 to find out the lbs per bushel. (Most people in the early 1700s had difficulty in multiplying because they were commonly using Roman numerals.)

The earliest English steelyard chondrometers I have seen were graduated 8-21, that is, ¼ stones per bushel (Figure 2a and 2b). So each graduation on the beam represented 3½ lbs. This seems peculiar today, but in the mid-18th century, it was normal to think in stones, half-stones and ¼ stones.[3]

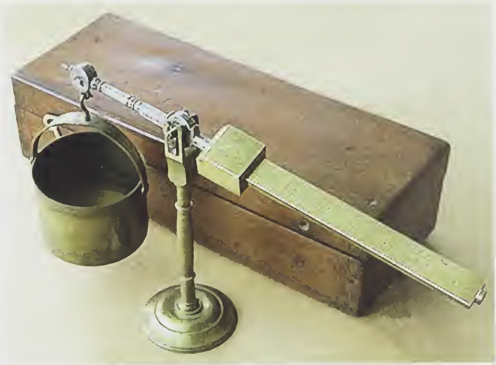


Figure 8. ➹➹ This chondrometer was signed DeGrave, probably Charles DeGrave II (1793-1811). The DeGrave family had a very big scale-making business through the 19th century. The design of the steel part of the beam is classic high-quality English work.

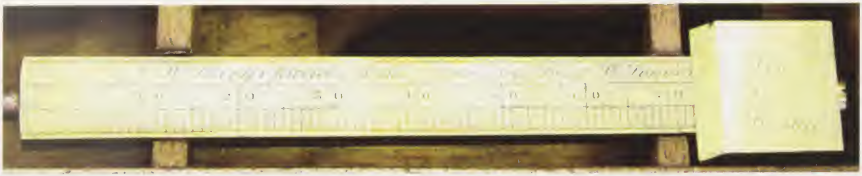


Figure 9a. ↑↑ "C W Dixey, Optician to the Queen, New Bond St, London" is engraved along the beam. Opticians were frequently general instrument makers as well as lens grinders and makers of optical instruments. Note the steel screw on the left end, used as a stop to prevent the poise from falling off the beam.

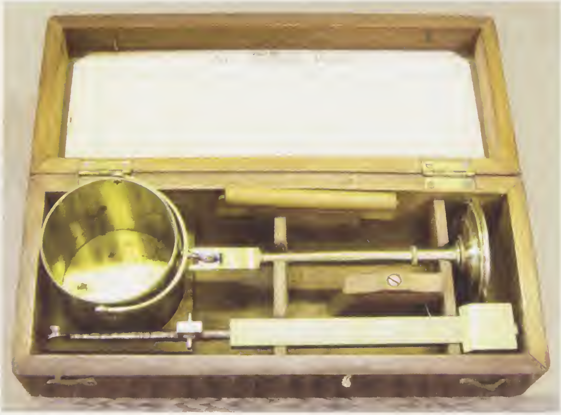


Figure 9b. ↗↗ Charles Wastell Dixey (1838-1862) made or retailed this conventional chondrometer with its boxwood strike. The label refers to the 1826 Act, although the Act had already been in operation for a minimum of 12 years, and possibly for considerably longer. 18 types of grain are listed. One bucket was used for all 18 types of grain, with one set of graduations, so the Book of Tables was essential for differentiating the quality of any one type of grain.

One example is known of a chondrometer engraved 'W Packer, Inventor', (dates unknown) with graduations 100-304. Figure 3. It has a pillar that is permanently attached to the flat base, with a flexure spring that fixes the pillar in the upright position when pulled through 90°. This form is reminiscent of one kind of counterfeit coin detector, used to check guineas in the 1770s and 1780s. The graduated portion of the beam is made of ivory, another feature that could well date it to the 1770s and 1780s. The graduations

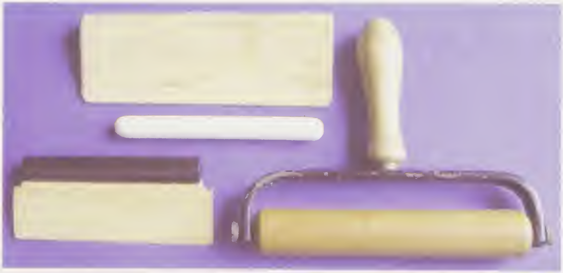


Figure 10. ↗↗ Strikes were usually dual purpose, acting as a strike and as a roller, like the one at bottom left, with the ebony roller and the boxwood strike glued together, and the top wedge-shaped example with a rounded thick side and a fine thin side. Ones that only rolled were confined to use in areas of the country where the convention was to roll the grain in the bushel, squashing it down, and compacting it.

Figure 11. ↗↗ The average weight for 18 types of grain was a quick way to decide what the grain could be used for, or how much to pay for it. For edible grains, if above the average (mean) number, the grain would be used for human consumption. Average grain was used as seed for the following year. Numbers below the mean indicated grain for animal feed.

Types of British Grain with Average Weight per Bushel

Wheat	60	Hemp	40	Cinque Foil	25
Rye	53	Linseed	49	Peas	64
Barley	50	Turnip	49	Small Beans	63
Red Clover	63	Oats	38½	Canary	55
White Clover	68	Meadow Grass	14	Rape	48½
Dutch Clover	68	Rye Grass	20	Buck Wheat	48½

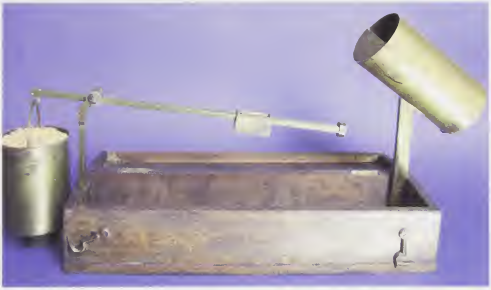


Figure 12. ↖↖ Adie & Son of Edinburgh (1835-persisted with same name until 1880) used different designs from those of the London instrument makers. This is possibly an example of the first chondrometer made with a funnel. The pillar is pegged into a fitting on the left end of the box. The beam is permanently attached to the pillar. The ⅓ pint bucket is narrow enough to swing freely although so near the box. The poise has a rectangular opening on its top surface, so the fiducial edge is read inside the opening. The brass screw on the end of the beam keeps the poise captive. The pillar at the right-hand end is hinged, attached to the box. The pillar has three holes towards the top, so the funnel can be pegged in the appropriate hole for each grain. Originally there must have been an instruction sheet stating which hole was for which grain.

proved by experiment to be 4 oz (or ¼ lbs per bushel). It seems that a standard ratio to the bushel had not yet been established.

At the beginning of the period of standardisation, by 1796, the graduations were being given in lbs per bushel, as seen on Winlaw's pendulum chondrometer.[4] Figures 4a & 4b. British chondrometers were graduated from about 20 to 75 lbs per bushel. Labels in boxes in the first quarter of the 19th century called it "*The Improved Pocket Chondrometer*". Figures 5 & 6. Was the 'improvement' giving the estimate in pounds instead of ¼ stones or ¼ lbs?

John Snart II[5] of Tooley Street (1799-1832), a scientific instrument maker, claimed to be the only maker of the chondrometers sold by the instrument-makers. However, as styles varied more than would be normally made by any one maker, this was probably an exaggeration, but he certainly appears to have made the standard version as sold by Coombe & Co, Cary and Benjamin Payne, etc. He had the advantage of being trained as an instrument maker, and being the relative of a scale-maker, from whom he took over.

It is difficult to decide which trade monopolised the making of standard chondrometers. The steel part of the beams are normal scale-beams, with either swan-neck ends or box-ends, definitely products of London scale-makers. The poise end of the beams, made of brass, engraved and lacquered, are products of the instrument-making trade. Could it be that the scale-makers supplied "half-beams" to the instrument-makers to be screwed into

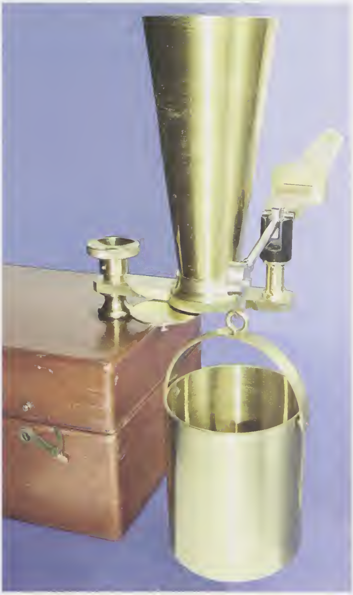
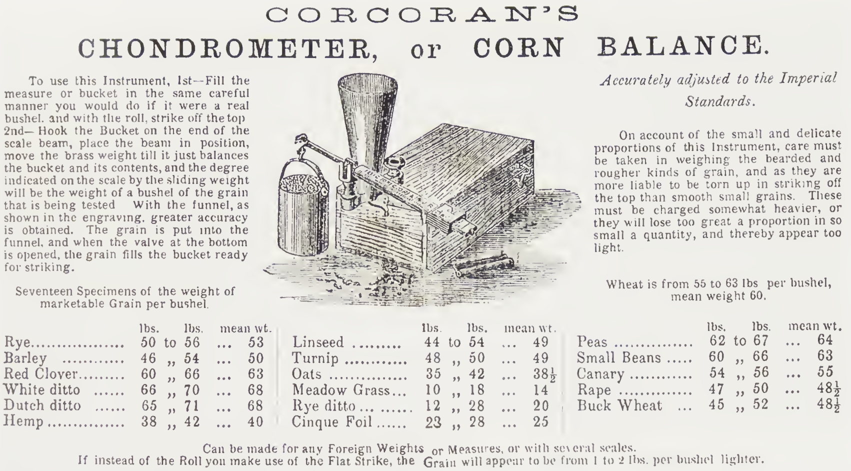


Figure 13a. ↘↘ Bryan Corcoran Ltd (1901-1910) maintained the firm's tradition for making big strong chondrometers with large buckets. This example has a ¾ pint bucket, making it far more reliable than one of only ⅛ pint. A hefty screw holds a bar above the box. The bar is integral with a ring round the bottom of the funnel, and extends at the far side to a little pillar that supports the beam and the bucket.



CORCORAN'S
CHONDROMETER, or CORN BALANCE.

To use this Instrument, 1st—Fill the measure or bucket in the same careful manner you would do if it were a real bushel. and with the roll, strike off the top 2nd—Hook the Bucket on the end of the scale beam, place the beam in position, move the brass weight till it just balances the bucket and its contents, and the degree indicated on the scale by the sliding weight will be the weight of a bushel of the grain that is being tested With the funnel, as shown in the engraving, greater accuracy is obtained. The grain is put into the funnel, and when the valve at the bottom is opened, the grain fills the bucket ready for striking.

Accurately adjusted to the Imperial Standards.

On account of the small and delicate proportions of this Instrument, care must be taken in weighing the bearded and rougher kinds of grain, and as they are more liable to be torn up in striking off the top than smooth small grains. These must be charged somewhat heavier, or they will lose too great a proportion in so small a quantity, and thereby appear too light.

Seventeen Specimens of the weight of marketable Grain per bushel.

Wheat is from 55 to 63 lbs per bushel, mean weight 60.

	lbs.		lbs.	mean wt.		lbs.		lbs.	mean wt.		lbs.		lbs.	mean wt.
Rye	50	to	56	... 53	Linseed	44	to	54	... 49	Peas	62	to	67	... 64
Barley	46	,,	54	... 50	Turnip	48	,,	50	... 49	Small Beans	60	,,	66	... 63
Red Clover	60	,,	66	... 63	Oats	35	,,	42	... 38½	Canary	54	,,	56	... 55
White ditto	66	,,	70	... 68	Meadow Grass	10	,,	18	... 14	Rape	47	,,	50	... 48½
Dutch ditto	65	,,	71	... 68	Rye ditto	12	,,	28	... 20	Buck Wheat	45	,,	52	... 48½
Hemp	38	,,	42	... 40	Cinque Foil	23	,,	28	... 25					

Can be made for any Foreign Weights or Measures, or with several scales.
If instead of the Roll you make use of the Flat Strike, the Grain will appear to be from 1 to 2 lbs. per bushel lighter.

Figure 13b. ↗↗ Bryan Corcoran Ltd instruction label. Note the comment about bearded and rough grains on the right.

the brass beams? This collecting of parts from several sources was done in these trades, as in the clock-making trade. The person who put the parts together would put his own name on the finished product and would claim to be the maker, or he would engrave the name of the retailer if requested.

The scale-making trade in England was organised in an arbitrary way, with one maker specialising in making one or two kinds of scales, which he sold at wholesale prices to his neighbouring scale-makers, and he bought wholesale from them, in return, some particular scales that they made. This enabled all the scale-makers to claim that they were makers, and to supply a wide range of scales, without needing to have facilities to make every variety. This methodology also applied to scientific instrument makers.

The size of the Winchester bushel altered when the Weights & Measures Act of 1826 was promulgated, and gained a new name, the Imperial bushel. It only became fractionally bigger, and given the difficulty in pouring the grain into the bushel and the bucket precisely, probably the user was unaffected by the change.

The use of a pendulum scale was highly unusual. Winlaw was possibly the second ever maker of pendulum scales in Britain. Figure 4a. By 1800, the

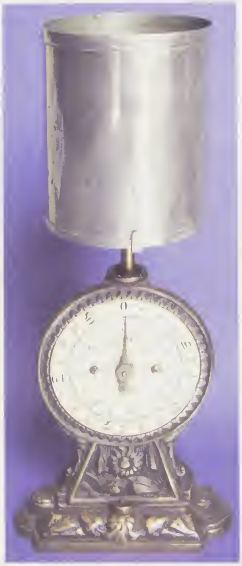


Figure 14. ↗↗ Salter's Corn Balance No. 42. The application to corn is only one of several uses to which this top-pan spring balance was put. It was produced, with different pans, different springs inside and different dial faces, as a letter balance, a counting (estimating) balance, and a diabetics' diet balance. It had instant read-out, in both exact weight (up to 15 oz.) and estimated lbs per bushel (up to 80 lbs). The casing is made of 'bronzed' iron, the dial of 'enamelled' (painted with printed graduations) metal, and the bucket of nickel-plated brass. This smaller version with a 3" dial cost 11/- in 1893. This was considerably cheaper than a steelyard chondrometer at that date.

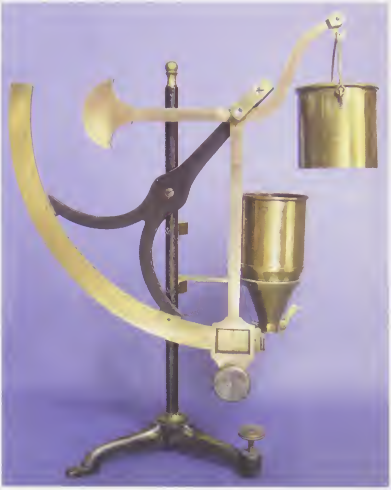


Figure 15. ➚➚ This was one of several pendulum scales being produced in England from around 1863. The Germans picked up the principle, and Schopper of Leipzig patented this design in England in 1884. Thereafter German makers dominated the market in pendulum scales, exporting them across the world. This chondrometer is tall, 18½" (465 mm) high, with two hole-fittings for the funnel on the pillar. The upper one is stamped "For Oats". The valve at the bottom of the funnel has a trigger action to open the valve. The rectangular opening in the poise has a wire across it, so the figures are not obscured.

conventional chondrometer was a steelyard. The earlier ones very occasionally had a folding or fold-down pillar, as in Figure 5, but the great majority had a pillar on a circular base as in Figure 8. All the parts were stored individually in a mahogany box about nine inches long, with blocks of wood holding each part securely. Figure 9b. They were called "pocket chondrometers"; 'pocket' meant a compact and easily portable item, not necessarily to truly fit in a pocket.

Watkins & Hill (1819-1856) used a label headed "*The New Improved Pocket Chondrometer made according to Act of Parliament, January 1st, 1826*" in their box containing a conventional chondrometer, the poise being engraved "*Lbs per Bushel Imperial*". This use of '*Improved*', the pre-1826 terminology, with '*New*', the post-1826 terminology, suggests that the label was printed very shortly after the new Act was enacted.

Chondrometers were available from many scientific instrument makers as shown in Figure 9b, and from a few scale-makers. See the Table of Makers/Retailers, Figure 17. Going by surviving examples, it appears that the

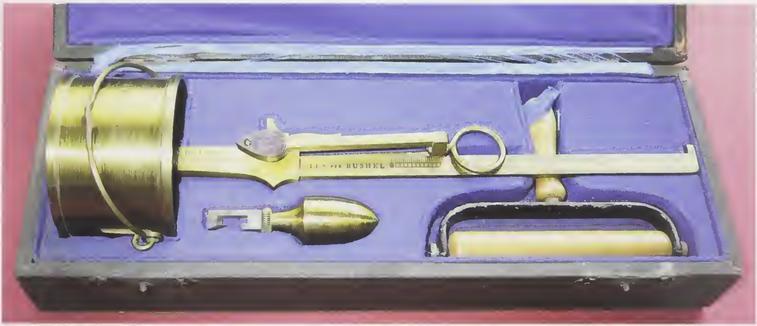


Figure 16a. ⬆⬆ M Hedicke (1884 on) was originally the agent in London for Louis Schopper, but this hand-held scale does not bear Schopper's logo, only Hedicke's name. The poise hangs freely from the beam so is very easy to move. The flat pointer is hinged above the fulcrum, and is folded sideways to fit in the case. The case is pitch-pine covered with black linen. It is the only example seen by me with the capacity (¼ pint) marked on the bucket.

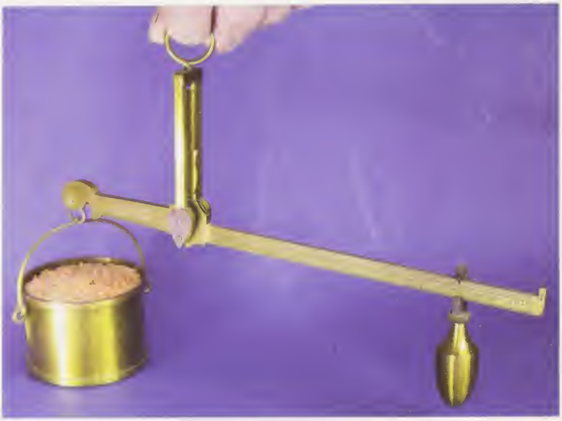


Figure 16b. ↗↗ Hedieke's steelyard has the same disadvantage as most steelyards. It is easy for the poise to skid along the steelyard so that the beam tips unexpectedly. The poise used on most chondrometers was firmly secured by a small flexure spring so the poise did not move inadvertently. The beam end is of German design, but it was made for the English-speaking world being graduated in lbs per bushel.

place to buy chondrometers was London. I have recorded 65 chondrometer makers/retailers working in London but only one in Liverpool and one in Bristol, two in Edinburgh and two in Dublin, and three in Birmingham.

It was essential that the density of the grain in the bucket matched that of the grain in the bushel, or the estimate of the number of pounds per bushel would be erroneous. The use of a strike to scrape the surplus grain off the top of the bucket (in regions where that was done to the bushel) gave consistency, or the use of a roller in those regions where the grain was rolled flat gave consistency to the denser method of filling. Figure 10. The various grains had such different properties (Figure 11) and they packed down such different amounts, that the user had particular difficulty in testing rye, cinque foil, hemp and oats.

Because it was found that the density of the grain in the bushel could be affected by the height from which it was poured, regulations were applied to this process. Subsequently the proportionate height restrictions were applied to the pouring into the chondrometer's bucket. Eventually the system of pouring was standardised by putting the grain into a funnel from which the grain was released into the bushel and similarly into the bucket. We have been unable to discover when the funnel was first used.

An early style of funnel was used by Adie & Son,[6] which had to be filled very carefully through a small aperture, then pegged into one of three holes in the hinged pillar. Figure 12. If smooth grains were to be estimated, then the lowest hole on the pillar was used. If oats, with all its whiskers, was to be estimated, the top hole was to be used. This increased the speed of the oats' fall, packing it more densely into the bucket. To prevent the grain from descending prematurely before the funnel was full, a circular valve closed the hole in the bottom of the funnel. When the bucket was in place, the valve was pulled sideways, and the grain fell evenly into the bucket.

The funnelling system was gradually refined, probably by Bryan Corcoran, a major maker of chondrometers.[7] He and his descendants produced numerous versions of chondrometers, many larger than average, all beautifully made and very rugged. He mounted them securely on the box, whereas previous makers, although using the box as a location for a pillar, had rather rickety supports. Corcoran put a finely made valve with a large knob on it, under the funnel, making it easy to manipulate the valve. Figure 13a.

Towards the end of the 19th century, the practice of mounting the scale and the funnel on the box was refined. Figure 13b. This made it easier to use. The Germans used extreme precision, requiring the user to pour the grain in one container from a consistent height into the funnel, then drawing the grain from the funnel into the bucket by suction. The British never went to such lengths. Chondrometers were available with up to eight sets of graduations for international trading in grain, but these were only made in Britain if specially ordered.

George Salter & Co came into the market with a top-pan spring balance before 1890.[8] This development had the great advantage that the user had only to fill the bucket, strike it, place it on top of the scale, and read the dial face. Figure 14. The user did not have to carefully nudge the poise along the beam of a steelyard, check whether it was in the right place, and carefully shift the poise several times until the beam was truly in equilibrium. I found that the poises were so tightly fitted (with a spring inside the poise) that they were fiddly to adjust.

Louis Schopper of Leipzig[9] made numerous variations for use on the continent, mainly pendulum chondrometers that, like the Salter above, had instant read-out. Figure 15. He had agents in the UK, such as H E Messmer, M Hedicke and F Leunig, who produced catalogues in English from about 1890. His pendulum chondrometers were extremely popular in situations where they were kept on a table or bench. These pendulum scales were not pocket chondrometers, being too tall and unwieldy for easy transportation. They were frequently used in research units and laboratories when crop yields were being studied, as read-out was immediate.

M Hedicke[10] produced a hand-held version, a travellers' chondrometer packed in a cloth-covered case with a lurid blue lining. Figure 16a & 16b. The need for simple chondrometers continued into the beginning of the 20th century, but they were no longer being advertised in the catalogues of the major scale manufacturers.

In 1847 W & T Avery[11] had exhibited a large range of chondrometers, but by 1880 chondrometers were absent from their catalogue, even though Averys prided themselves in providing for every weighing need. Did they decide that Bryan Corcoran and others had saturated the market? By studying the Table of makers, Figure 17, it is apparent that there were still scientific instrument makers such as T O Buss and J Long[12] retailing chondrometers until at least 1930.

This preliminary study shows the gradual technical advances that were made in Britain from around 1700 that enabled users to estimate grain quality more precisely. By 1940, references to chondrometers occur mainly in texts relating to scientific research and the most modern texts refer to digital chondrometers. One must regret that advances in precision and materials over the last 50 years have not been accompanied by equivalent advances in design and craftsmanship to equal the handsome pocket chondrometers of the previous 250 years.

Notes & References:

1. Numerous books of Tables were produced, for example, those by John Thomson of Edinburgh in 1777, by John Snart II in 1817 and by Sheppard in 1820.

2. John Snart I (1693-1738) of Maiden Lane, London, was the most important scale-maker from the reign of William & Mary, until that of George I. He collaborated with Sir Isaac Newton to produce scales for use in the new Mint in Edinburgh. He made the new Standards for Scotland after the Union of 1707, and made at least 20 sets for the local authorities in Scotland. He made gold, assay, coin and diamond scales, and length measures. He made coin and diamond weights, Standard Bell weights and wool weights. He was under contract to keep in repair the scales at Christ's Hospital. He trained numerous apprentices, of whom five became master scale-makers. He was a Major in the Militia, and was an active Alderman in his Ward. He was the auditor for Blacksmiths' Company, a highly respected job.

3. Thinking in Stones survived well into the 20th century. The author would buy ½ Stone, rather than 7lbs potatoes, in the 1950s and 60s, and nobody at the shop would be puzzled.

4. William Winlaw [Winnlaw] was an Engine maker with a large courtyard and out-buildings behind his main building in Margaret street, Cavendish Square, London. He is known to have worked from 1786 until he died in 1796. In the late 1700s, an engine-maker commonly made fire-engines. However, in spite of being in the middle of London, Winlaw was widely known for his invention of a very effective threshing machine. He wrote a book lauding his engines in 1786. Not having seen a copy of this rare book, we do not know whether it included his chondrometer, but obviously a chondrometer would suit his clients who were buying the threshing machine. Winlaw sold agricultural equipment to the Earl of Egremont in 1796. Even Thomas Jefferson in Washington, DC, asked Col. Monroe to buy him a Winlaw thresher in 1807. (Only one previous design of scales is known using the pendulum principle in Britain, and that was made or retailed by Anscheutz & Schlaff to J S Clais' patented design of 1772. They made pendulum scales for British coins, scientific work and for farm use.)

5. John Snart II (1799-1832) was widely known to the reading public because he wrote a book about being buried alive. He had heard of a case of this happening, and wrote a lurid account that not only gave him nightmares, but probably gave nightmares to thousands of readers. He wrote mathematical books of Tables. He wrote letters to the editor of the Philosophical Magazine on a Variety of the Genus Acarus, belonging to the Order Aptera, found on the wings, &c. of a feathered Fly of the Order Diptera, (probably to stimulate interest in the microscopes that he sold.) In 1823 he wrote to the editor of Mechanicks regarding the design of carts with a proposal that there should be a sliding lever fixed to the underside of the cart to prevent its over-turning. He gives the impression of an intelligent man of wide interests who used the most complicated language possible, and who loved to be in the lime-light.

6. Alexander Adie & Son (1835-1880) of Edinburgh were in competition with 'exporters' from London, so needed to offer innovative instruments to the Scots in order to compete. His chondrometer has a good quality mahogany box that is now very tatty through heavy usage.

7. Bryan Corcoran I, (1780-1831) started as a Stationer & Paper-hanger, made paper from rags, made the wire-mesh for making paper, progressed to making Mill-stones (to process the rags?), and eventually was making chondrometers, bushels and other equipment for millers by 1800. His family continued the company for another 80 years after his death in 1831. His business thrived until after 1900, partly because, from 1780, he had his retail business in Mark Lane, the street on which the London Corn Exchange was situated.

8. Richard Salter started as a spring maker to the gun trade in 1760, but when George took over in 1791, he expanded the uses for springs, making spring balances, pocket steelyards (the contemporary term for little spring balances), vertical roasting jacks, muskets and bayonets. Bilston was an ideal place to make springs for the flourishing trades in Birmingham.

9. Louis Schopper, mechanicien, (1881-on) specialised in equipment for the paper, textile and grain trade. His company grew rapidly, and he exported to many countries. The company was expropriated by the Soviets after World War II, as Schoppers manufactured equipment for testing metals and rubber. After the fall of the Berlin Wall, the company was again privatised under a new name, still making modern versions of Schopper's pendulum designs.

10. M Hedicke appeared in British documents in 1884, taking out a patent on behalf of Louis Schopper of Liepzig.

11. W & T Avery (1816-on) were another family that changed their products. Having started life as drapers, they took over the ailing scale company of their incompetent young brother-in-law, and gradually made it the largest scale-making company in Britain. They expanded as Birmingham expanded.

12. Joseph Long (1821-1846) started a company that, towards the end of the 19th century, specialised in making equipment for the Excise Office, such as hydrometers, thermometers, slide rules and chondrometers.

Acknowledgements:

With grateful thanks to Peta Buchanan, Norman Biggs, Andrew Crawforth, John Douglas, Les Firth, Alison Morrison-Low, John Jenkyn, and John Wintour for their assistance.

This article was written originally for the Journal of the Antique Metalware Society. It has been altered to suit ISASC members.

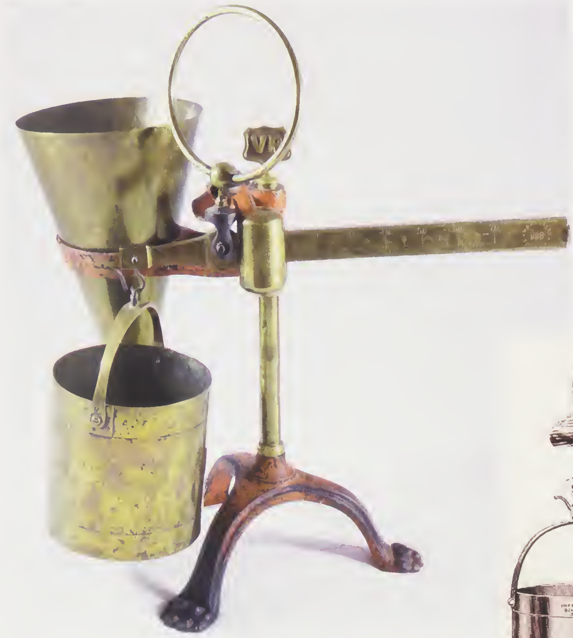
Figure 17 **Makers/Retailers of Chondrometers, with known dates and Trade.** (IM=Instrument Maker)

Surname	Fore-names	Street	Town	Trade	Dates	Pre-Imperial	Type if not steelyard
Abraham	Abraham	Lord St	Liverpool	IM	1818-37	Yes	
Adie			Edinburgh	IM	1817-34	?	
Adie & Son	Alexander		Edinburgh	IM	1835-81	No	
Avery	W & T		Birmingham	ScaleM	1816-90	?	
Bailey			Bristol	?	?	Yes	
Bate	R B		London	IM	1818-45	No	
Bather Geo	Haymarket		London	ScaleM	1821-48	?	
Bedington	James		Birmingham	IM	1845-76	No	
Bleuler	John	27 Ludgate Circus	London	IM	1757-1829	Both	
Bogler & Co			London	?	?	?	Pendulum
Bradford	Isaac	136 Minories	London	IM	1808-22	Yes	
Braham	John	10 St Augustine's Parade	Bristol	IM	1830-38	No	
Buss	T O	33 Hatton Garden	London	IM	1863-1900+	No	
Cary	which?		London	IM	1789-1825	Yes	
Casella	Louis Paschal	Hatton Garden	London	IM	1865-70	No	
Coombe & Co		30 Mark Lane	London	?	?	Yes	
Cooper	T				?	?	
Corcoran	which?		London	ScaleM	?	?	
Corcoran	Bryan II	31 Mark Lane	London	ScaleM	1872-91	No	
Corcoran & Co	Bryan	38 Mark Lane	London	ScaleM	1836-70	No	

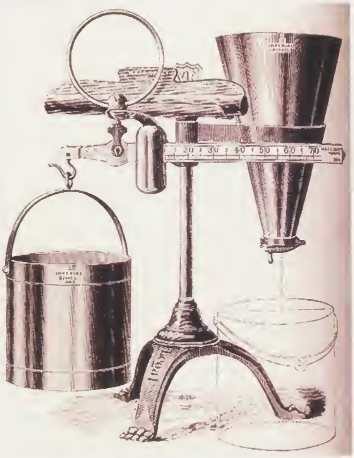
Surname	Fore-names	Street	Town	Trade	Dates	Pre-Imperial	Type if not steelyard
Corcoran & Co	Bryan	31 Mark Lane	London	ScaleM	1836-40ish	No	Spring dial
Corcoran & Grigg	Bryan I & John	31 Mark Lane	London	ScaleM	1812-17	Yes	
Corcoran Ltd	Bryan	31 Mark Lane	London	ScaleM	1901-10	No	
Corcoran, Witt & Co			London	ScaleM	1871-80	No	
Cox	Fredk	100 Newgate St	London	Optician	1845-1901	No	
DeGrave & Son	Mary	St Martin le Grand	London	ScaleM	1817-44	?	
DeGrave, Short & Fanner		59 St Martin's le Grand	London	ScaleM	1845-71	No	
Dell & Son	W R	26 Mark Lane	London	IM	1880	No	
Dell	which?			IM		?	
Dixey	Charles Wastell		London	IM	1838-60	No	
Dollond			London	IM	1804-52	?	
Dring & Fage			London	IM	1793-1894	No	
Ebsworth	George	54 Fleet St	London	IM	1828-35	No	
Elliott Bros		5 Charing Cross & 56 Strand	London	IM	1856-1910	No	
Fraser	William	3 New Bond St	London	IM	c.1720-99	Yes	¼ stone & ¼ lbs
Fraser & Sons	W	3 New Bond St	London	IM	1799-1817	Yes	
Griffiths	A		London	?	dated 1776	Yes	
Harris & Son	William	50 Holborn	London	IM	1840-55	No	
Hedicke			London	Agent	late19thC	No	
Hedicke	M	3 Adelaide Place	London	Agent	patent 1884	No	Pendulum
Hicks	I (Joseph)	8 Hatton Gardens	London	IM	1817-c.27	Yes	
Hudson	John Thomas	26 Charing Cross	London	IM	1840-60	No	
Hughes & Son		Park Lane	London	?	?	?	
Langley W		46 Tooley St	London	?	c.1875	No	
Leunig	F		London	ScaleM	c.1870-1900	No	Pendulum
Loftus	Wm Robert	321 Oxford St	London	IM	catalogue c.1885	No	
Loftus	W R	146 Oxford St	London	IM	1869-81	No	
Long	Joseph	20 Tower St	London	IM	1830-80	No	
Marratt	John Symonds	King William St	London	IM	1832-75	No	
Marratt & Short		63 King William St, L'n Bridge	London	IM	c.1859-65	No	
Marriott	Henry	89 Fleet St	London	ScaleM	1812-48	No	
MacKenzie (McKenzie?) & Swygart		15 Cheapside	London	IM	1816	Yes	
McKenzie	Alexander	15 Cheapside	London	IM	c.1840-60?	No	
Messmer	H E	13 Arthur St, New Oxford St	London W C 2	Agent	1864-1912	No	
Negretti & Zambra			London E C	IM	catalogue c.1880	No	
Nicholl	William Lewis	16 Aldersgate St	London	ScaleM	1808-50	No	
Packer	W		?	?	late 18th C	Yes	
Payne			London	ScaleM	1802-34	Yes	
Payne	Benjamin		London	ScaleM	1802-34	Yes	
Plimpton	George	Lincoln's Inn	London	IM	1831-34	No	
Rubergall	Thomas	24 Coventry St	London	IM	1800-54	No	
Rubidge	which?		London	ScaleM	1782-1820	Yes	
Salter & Co	George		Birmingham	ScaleM	1824-1954	No	Spring
Schmalcalder	Ch August		London	IM	1806-12	Yes	
Schopper	Louis	had Agents	London	ScaleM	c.1890	No	Pendulum
Smith	William	High St, Boro`	London	IM	1802-46	No	
Snart I	John	Maiden Lane	London	ScaleM	1693-1738	Yes	
Snart II		122 Tooley St, Southwark	London	IM	1799-1832	Yes	

Surname	Fore-names	Street	Town	Trade	Dates	Pre-Imperial	Type if not steelyard
Snart II	John	215 Tooley St	London	IM	1799-1832	Yes	
Spear I	Richard	27 College-green	Dublin	IM	1791-1814	Yes	
Vandome, Titford & Co		117 Leadenhall St	London	ScaleM	1841-63	No	
Vandome, Titfords & Pawson		117 Leadenhall St	London	ScaleM	1866-98	No	
Watkins & Hill	Francis & Wm	5 Charing Cross	London	IM	1819-57	No	
West I	Francis	92 & 93 Fleet St	London	IM	1849-52	No	
Winlaw	Wm	Margaret St, Cavendish Sq	London	EngineM	1786-96	Yes	Pendulum
Yeates & Son	Geo		Dublin	IM	1840-64	No	
Young	John	5 Bear St	London	ScaleM	pre 1811 ?	Yes	
Young & Son	J	Bear St	London	ScaleM	1811-1901	No	

Showcase



This grain outfit was located in *WM. and J. G. Greey's Descriptive Catalogue and Price List* for 1901, where it was entitled *Greey's Improved Mill and Warehouse Grain Tester* and described as follows: 'This is the **STANDARD-CHONDROMETER** for weighing grain and seeds. *Complete with Filler-Funnel, Strike and Stand*. Made in half-gallon and quart sizes. *The only reliable and absolutely accurate, disinterested truth teller of the actual value of grain*. Made in finely polished brass, and correctly proportioned. Weighs most sensitively. The Scale Beam should be left in its place as a counter-balance to the weight of the Funnel. The bottom edge of the Funnel should be 2½ inches above the Bucket, as shown by the dotted lines'.



The bucket is marked 1/32 Imperial bushel and the beam is marked W&J Greey, Toronto. Greey was established in 1874, and were located at number 2 Church St.; Toronto, Canada. Leslie N. Firth Collection.

Gilfillan Postal Scales

BY PETER LAYCOCK

Essington Newell Gilfillan was born in Pennsylvania in 1852 and was the second oldest of nine children. The Gilfillans were a family of farmers and farmed in Pennsylvania and Iowa. By 1870 the Gilfillan family had moved to Iowa where Essington Gilfillan was listed at age 17 as a *farm laborer*. By the 1875 Kansas census, 22 year-old Essington had married 20 year-old Emma Lockwood and moved to Fort Scott, Kansas, where he was listed as a *grocer*. In 1880 he was listed as being a *clerk in dry goods*. In the 1885 Fort Scott census he was listed as a *stone contractor*, which explains his first patent application in November 1883 for a stone dressing machine. The 1887 St. Louis, Missouri city directory listed Gilfillan as *Manager, Gilfillan Car Seat Co.*, and he later was issued several patents for railroad car seats. By May, 1889, Essington and Emma moved to Chicago, where Essington applied for his first scale patent. In the 1900 census, at the age of 47, he was listed as a *manufacturer of specialties*, which I assume would include scales. The 1900 Chicago city directory listed his business as *Novelties*, a catch-all term.

Through a search of the US Patent records I have identified an astounding forty nine patents that were issued to Gilfillan between 1884 and 1913. Eleven of them were for scales or scale related items, and the remaining patents cover a wide range of *Specialties* including, among others, items such as: a reclining chair, thread cabinet, pen holder, car seat, labeling machine, coin counter, egg carrier, sash pulley, hand truck, bottle stopper, pencil sharpener and cigar wrapper. In addition to census records, patents are useful to trace where Gilfillan lived. Most of the patents were applied for while Gilfillan was living in Chicago between 1889 and 1909. Based on patent filings, by August, 1909, he and his wife Emma moved to Syracuse, New York to be near their married daughter Edith.

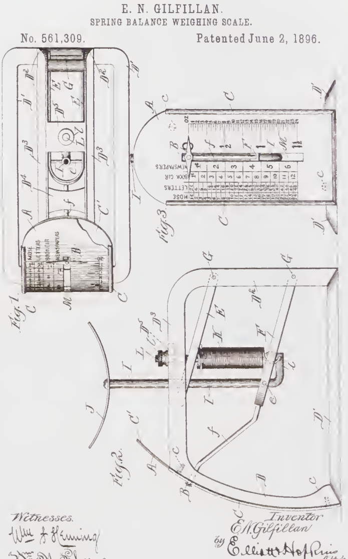


Figure 1.

The final census appearance for Essington and Emma was in the May, 1910 census for Syracuse. Essington was listed as a *machinery designer* at age 57. However, by December 27 of that year, Emma was listed as Executrix on his last patent filing, indicating that Essington died between May and December, 1910. Two of his patents were issued to Emma in 1912, and a final patent was issued to their daughter Edith in 1913, so Emma had also died by then.

Apart from his patents, we know from many examples of his work that Essington Newell Gilfillan was a prolific inventor and manufacturer. It is assumed that he established his business in Chicago sometime during 1888 or 1889. The Gilfillans appeared in *The Chicago Blue Book* as early as 1890, and continued to be listed through 1897, which suggests a relatively quick level of financial success. The *Office Men's Record* for December, 1893 reported that the *Chicago Spring Balance Co.* 234 Clark Street, Chicago received the highest award for Postal Scales and Spring Balances at the World's Columbian Exposition of 1893. By June, 1894 the name was changed to *Gilfillan's Scale and*

Hardware Co. situated at 133-139 S. Clinton Street, Chicago. The business was also referred to as *G. S. & H. Co.* and *Gilfillan Scale & Hdw. Co.*. In a report issued by the *Factory Inspectors of Illinois* dated December 15, 1896, Gilfillan Scale & H'dware Co. at the Clinton street address, dealing in *Hardware Specialties* had in its employ twenty men over the age of sixteen. There are references to this company right through to 1899.

Gilfillan had invented quite a number of scales and had registered many patents the most prominent being the patent for what is generally called today the *Bow Front Scale*. Ultimately it has been employed by many scale makers all over the globe and is still being used today more than one hundred years after he had registered his patent. This patent (Figure 1), No. 561309, was applied for Apr 17, 1894 and was issued June 2, 1896. The patent diagram of this scale is shown here. In the patent Gilfillan describes the scale as follows: *In carrying out my invention I employ an upright curved or bowed scale-plate, and I mount the index or pointer on one of a pair of parallel spring-actuated pivot arms whose free or swinging ends are connected to and supported by the stem of the scale-pan and which in turn hold such stem in an upright vertical position, the graduated scale-plate being bowed on an arc concentric with the arc described by the said pivoted arm to which the index is secured.* The bow front frame and the unique spring mechanism has become a standard for small desk top scales.

At sometime late in the nineteenth century some sort of business arrangement was made with the Pelouze Scale Manufacturing Co. and patent protection information of the Gilfillan patents began to appear on Pelouze scales. While there is an abundance of scales incorporating the patents and designs of Essington Newell Gilfillan, many having been produced by the Pelouze Scale Company, their predecessors, those manufactured by Gilfillan, are quite scarce.

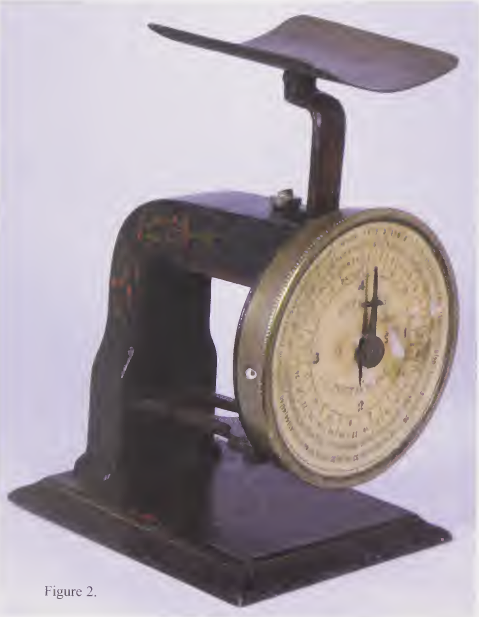


Figure 2.

This (Figure 2) is an early Gilfillan's spring postal scale with a cast iron frame with a circular dial and a celluloid face. On the face it is referred to as *Gilfillan's U. S. Postal Scale*. The pointer is activated, as the load is placed on the letter plate, by a small rack and pinion mechanism. It weighs mail up to 4 pounds and indicates the postal rates of the period for Merchandise, Letters, Books and Papers as shown in the four successive rings of rates on the face (Figure 3). It is painted black with red and gold pin stripe and floral decoration. The

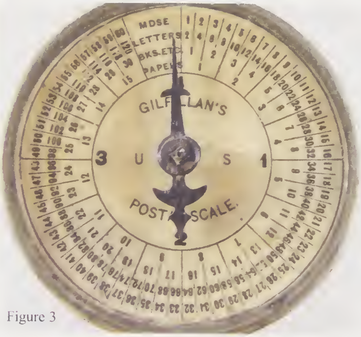


Figure 3

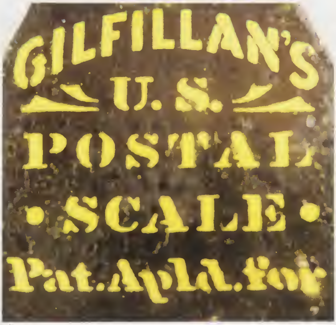


Figure 4.

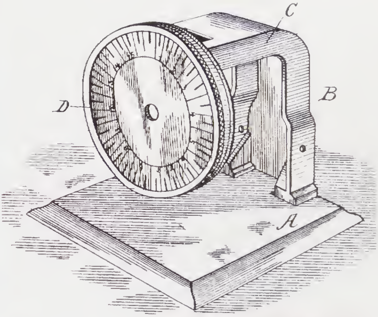


Figure 5.

face plate is held in place by a nicely machined brass ring and the curved brass letter tray is attached by a screw. On the base is *Chicago Spring Balance Co. Pat Appld For* and on the back is *Gilfillan's U. S. Postal Scale Pat. Apld. For* (Figure 4). Patent number D25327 (Figure 5), for the cast iron scale frame was applied for on Apr 5, 1894 and issued on March 31, 1896.

This (Figure 5) is a copy of the patent diagram submitted by Gilfillan. The patent does not state that this scale body was to be used exclusively for postal scales and was used for other larger scales as well. In the Berning collection there are two family scales using the larger cast iron scale frame (Figure 6).

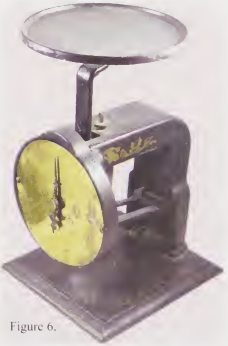
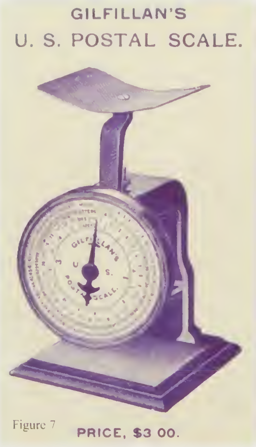


Figure 6.

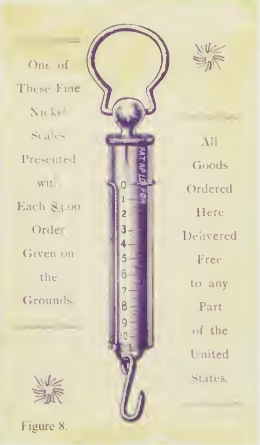


GILFILLAN'S
U. S. POSTAL SCALE.

GILFILLAN'S
U. S.
POSTAL SCALE.

Figure 7

PRICE, $3 00.



One of These Fine Nickel Scales Presented with Each $3.00 Order Given on the Grounds.

All Goods Ordered Here Delivered Free to any Part of the United States.

PAT APLD FOR
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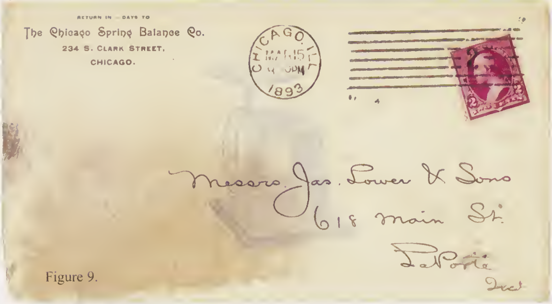
Figure 8.

A little trade card (Figures 7 & 8) depicting this scale was used at the Chicago World's Fair in 1893 and was probably handed out to visitors to the Chicago Spring Balance Co. booth located at *Sec. Q., Block 1, Manufacturers Bldg., World's Fair Exposition.* Note the price, $3.00, quite expensive I would think for that era. On the back is an image of a hand held spring scale, patent No. 498711 which was issued May 30 1893.



RETURN IN — DAYS TO
The Chicago Spring Balance Co.
234 S. CLARK STREET,
CHICAGO.

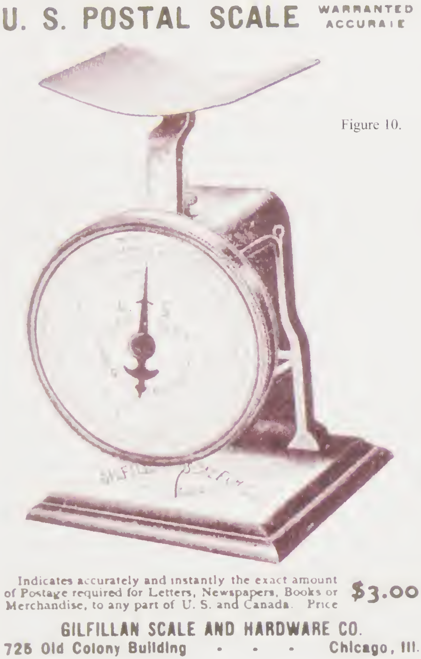
CHICAGO ILL.
MAR 15
4 PM
1893

Messrs. Jas. Lower & Sons
618 Main St.
LaPorte
Ind

Figure 9.

There is also an image of a scale using this patented frame on this envelope (Figure 9) from *The Chicago Spring Balance Co.* It appears to be a larger scale and has a round plate typical of those used on family scales. The envelope was mailed from Chicago March 15th, 1893. We can conclude from the date of these two items that Gilfillan was dealing in this scale frame well in advance of applying for a patent (Apr 5, 1894). I am not sure one could get away with that today.

An advertisement (Figure 10) for this scale was found in *The Stenographer*, Volume V, Number 8, June, 1894. As can be seen, the printers' cut is very similar to the actual scale. Note that the face has *U. S. Postal Scale Warranted Accurate* and the reference to *Gilfillan Scale & H. Co.* is on the base. This scale could be ordered from Gilfillan Scale and Hardware Co., 725 Old Colony Building, Chicago, Ill. I assume that this may be the address of a retail outlet. This same image was also found on an advertisement in the August 1895 issue of *Travel, An Illustrated Monthly Magazine (Figure 11).* Included in this second advertisement is an image of a Gilfillan bow front called *The National*. It is interesting to note that the image of the scale used here is almost identical to the one shown in the Pelouze patent No. 601273. This patent references an earlier Gilfillan patent. The *National*, *Columbian*, and *Union* postal scales, all bow fronts, became a standard for Pelouze and many variations were produced for 50 years into the twentieth century. Additionally, this ad references a second retail outlet at 88 Chamber Street, New York.



U. S. POSTAL SCALE WARRANTED ACCURATE

Indicates accurately and instantly the exact amount of Postage required for Letters, Newspapers, Books or Merchandise, to any part of U. S. and Canada. Price $3.00

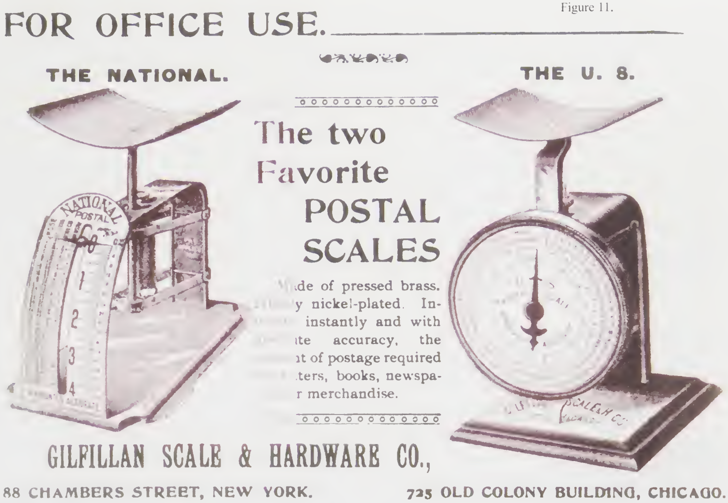
GILFILLAN SCALE AND HARDWARE CO.
725 Old Colony Building - - - Chicago, Ill.

Figure 10.

Both the patents, No. 561309 for the scale frame and No. 601273 for the hand held spring scale were, at some time acquired by The Pelouze Scale Company and reference to these patents began to be applied to similar Pelouze scales.

In fact Pelouze sued The American Cutlery Co for alleged infringement of patent No. D25327. In the case, 'Pelouze Scale & MFG. Co. versus American Cutlery Co.', brought before the Circuit Court of Appeals Seventh Circuit May 31, 1900 No.644, Pelouze requested the court to *Refrain infringement of Letters of Patent Design No. 25327 dated March*

Figure 11.



FOR OFFICE USE.

THE NATIONAL.

THE U. S.

The two Favorite POSTAL SCALES

…de of pressed brass.
…y nickel-plated. In-
… instantly and with
…ite accuracy, the
…t of postage required
…ters, books, newspa-
…r merchandise.

GILFILLAN SCALE & HARDWARE CO.,

88 CHAMBERS STREET, NEW YORK. 725 OLD COLONY BUILDING, CHICAGO.

31, 1896 and issued to Essington N. Gilfillan for design of a scale frame. The court ruled in favor of American Cutlery and ruled that there was no infringement.

This *Gilfillan U. S. Postal Scale* (Figure 12) with a very sturdy frame was also developed and patented by Gilfillan. Some were made from a thick wire and others from flat steel. Other than the wire frame, the spring mechanism, round display, celluloid face and the letter tray are virtually identical to the scale with the cast iron frame. On the back is a declaration as follows: (Figure 13) *Manufactured by*

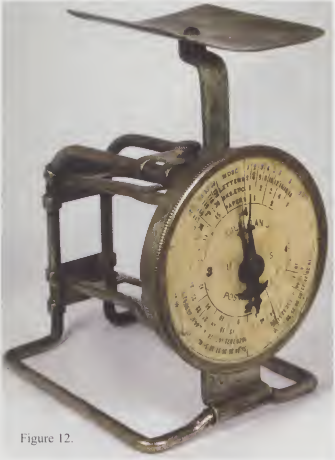
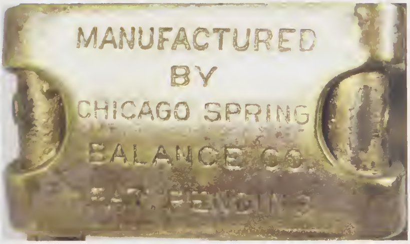


Figure 12.

Figure 13. ✓✓



Chicago Spring Balance Co. Pat. Pending. Patent D30114 was applied for November 30, 1894 and was issued Jan 31, 1899. Described as a *Frame for a Spring Balance*, a copy of the diagram submitted by Gilfillan with the patent filing is shown here (Figure 14). Note that the patent diagram shows the wire frame with a bow front application. This same frame was used with the scale shown here with the round face and a rack and pinion mechanism.

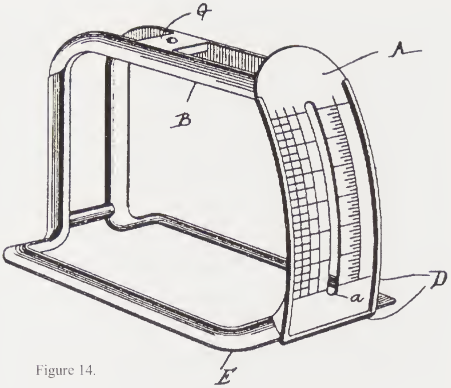


Figure 14.

Just as Gilfillan was manufacturing the cast iron framed postal scale well before he applied for the patent in 1894, I feel the same is true of the wire framed scale. The style of the face and the declaration that it was *Manufactured by the Chicago Spring Balance Co.* and the fact that both are identified as *Gilfillan U. S. Postal Scale* would indicate that it was marketed about the same time (1892/1893) as the cast iron model.

I know of several of these wire framed scales with the round face but the bow front version appears to be far rarer. There is a very nice example of the bow front version in the James Reeve collection (Figure 15). It is a nicely decorated postal scale which references *E. N. Gilfillan Co. Pat Pend Chicago*. The face (Figure 16) advertises *Marble Head Fine Cut (Tobacco).*

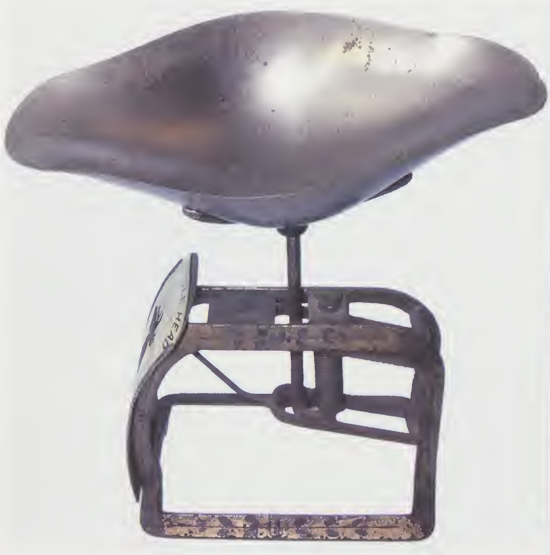


Figure 15.

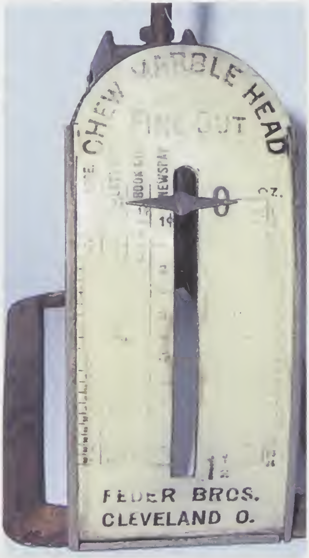


Figure 16.

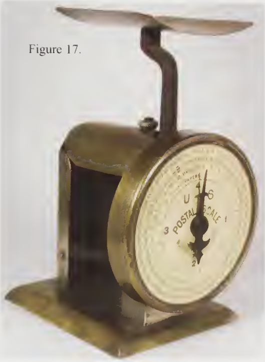


Figure 17.

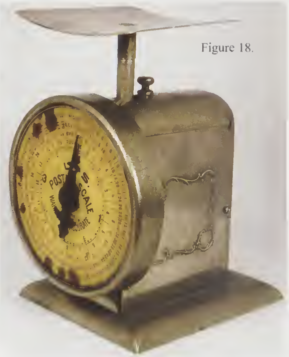


Figure 18.

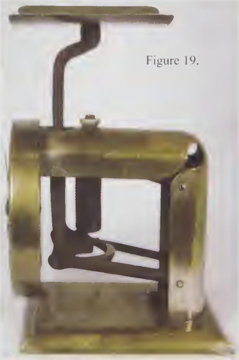


Figure 19.

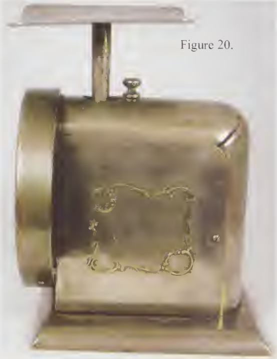


Figure 20.

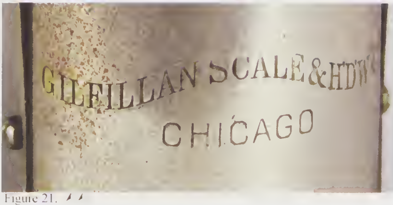


Figure 21.

Two other postal scales (Figures 17 & 18) that are manufactured by Gilfillan are identified as *U. S. Postal Scale*. The celluloid faces are the same as on the cast iron and wire framed models except there is no reference to Gilfillan on the face. *Warranted Accurate* has been added to one and *Warranted Accurate & Patented* to the other. The body (Figures 19 & 20) of these two scales is quite different. They are made from brass and have been nickel plated (although the nickel plating has almost completely gone from one and is starting to on the other). They are formed in an attractive rounded fashion. As with the earlier two they have the same spring mechanism and the pointer is activated as the load is placed on the letter plate by a small rack and pinion mechanism. One of these scales has open sides and the other has two attractive side panels attached to hide the actual spring mechanism. The open sided scale references patent information as follows *SEPT 12 92, JANY 12 93, PATENTS PEND'G*. After an extensive search no information on these patents was found. The closed sided scale only references patent on the celluloid face with a very small *Patented*. Both have a nicely stylized Maker's Mark (Figure 21) as follows: *Gilfillan Scale & HDW Co., Chicago* stamped into the body of the frame. The closed sided scale has a straight post supporting the letter plate which is held in place by a rivet like device. It is my assumption that this is an improved later model. As with the bow front scales Pelouze, over a number of years into the twentieth century, produced several variations of this scale.

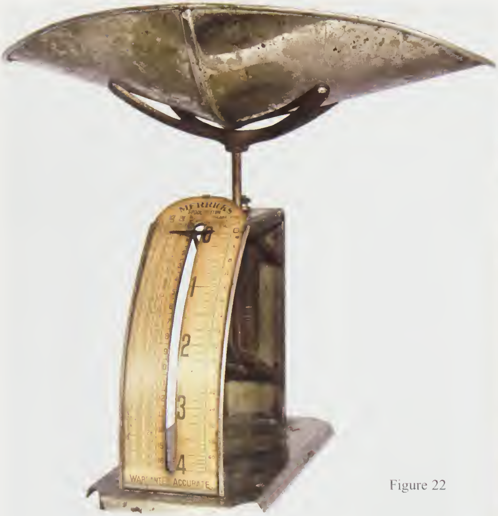


Figure 22

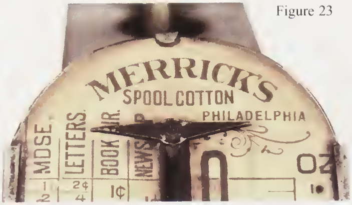
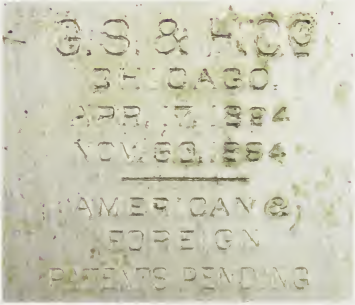


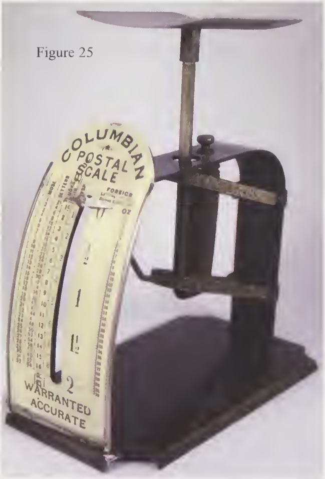
Figure 23

Figure 24.



This Gilfillan scale (Figure 22) was most likely produced as an advertising vehicle for the Merrick Spool Cotton Company and was probably given as a gift to retailers who sold their products. It is a postal scale with postal rates reflective of the period but because of the scoop style tray it was probably used to weigh bulk items such as buttons, spools, or other materials found in a millinery store. It weighs up to four pounds. The celluloid face is highlighted with *Merrick's Spool Cotton, Philadelphia* (Figure 23). The scale is made from sheet metal with a chrome or nickel plating and the base has scalloped corners. The scoop is held by a cast iron cradle that slips over the upright stem of the weighing mechanism. On the bottom (Figure 24) is *G. S. & H. Co., Chicago, Apr 17 1894, Nov 30, 1894 , American and Foreign Patents Pending*. The first is the patent for the bow front scale which was applied for Apr 17, 1894 and issued June 2, 1896 in the patent it is described as a *Spring Balance Weighing Scale*. The other patent is the one applied for is for a scale frame.

Figure 25



Recently on eBay there was another example of this scale advertising *Invincible Merchandise, Blankes Coffees And Spices, They Are The Best*. The scale appeared to be identical in every way including the patent declaration.

Here we have a nice example of an early *Columbian Postal Scale* (Figure 25). Columbian postal scales are quite common and since the late nineteenth century they have been manufactured by the Pelouze Scale Company of Chicago. This little fellow however was made by Gilfillan. It is a typical bow front spring scale that incorporates the principles of the Gilfillan patent 561309 of June 2,

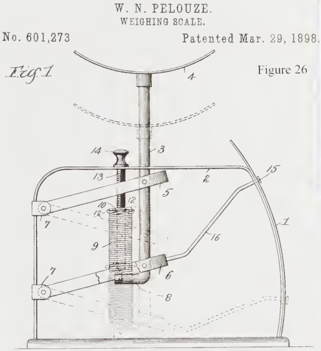
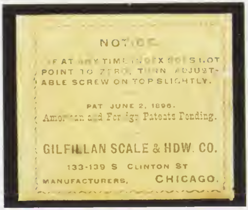


Figure 26



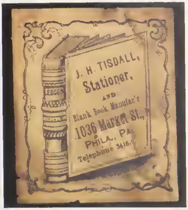
NOTICE.

IF AT ANY TIME INDEX DOES NOT POINT TO ZERO, TURN ADJUSTABLE SCREW ON TOP SLIGHTLY.

PAT JUNE 2, 1896.
American and Foreign Patents Pending.

GILFILLAN SCALE & HDW. CO.
133-139 S CLINTON ST
MANUFACTURERS, CHICAGO.

Figure 27.

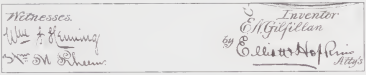


J. H. TISDALL,
Stationer,
AND
Blank Book Manufac'r
1036 Market St.,
PHILA., PA.
Telephone 3416.

Figure 28.

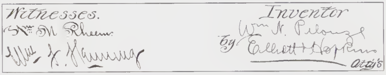
1896. However, Patent No. 601273 (Figure 26) applied for on Feb 3, 1897 and issued on Mar 29, 1898 to William N. Pelouze is more reflective of this scale. The frame is made from sheet metal, and has scalloped corners on the base. As can be seen in the attached patent diagram this scale is identical except for the scalloped corners. It is nicely decorated in black with gold and red pin stripe decoration. The celluloid face is held in place by two glide-flanges on either side of the metal bow front and has the postal rates of the period for Merchandise, Letters, Books & Newspapers. On the bottom of the scale two paper labels have been applied. The first (Figure 27) by the manufacturer *Gilfillan Scale & HDW Co. 133-139 S. Clinton St., Chicago* and the second (Figure 28) by the retailer *J. H. Tisdall, Stationer and Blank Book Manufac'r, 1036 Market Street, PHILA, PA. Telephone 3416.* The only reference to patent detail is on the paper label which states *PAT. June 2, 1896 . American and Foreign Patents Pending.* I can only assume that this scale was manufactured between the Gilfillan patent date of June 1896 and Feb 3, 1897 when the Pelouze patent was applied for.

These two patents, one issued by Gilfillan and the second by Pelouze, may help us to narrow in on a possible business arrangement reached between Gilfillan and Pelouze. In the Pelouze patent description there is a reference to the Gilfillan patent which may indicate that it belonged to Pelouze at the time of the application of his patent on Feb 3, 1897. It is interesting that the signatures of the witnesses and the attorney are the same on both patents. Only the signature of the inventor is different, E. N. Gilfillan on patent No. 561309 and Wm. N. Pelouze on patent No. 601273.



Witnesses.
Wm. J. Henning
Wm. M. Rheem

Inventor
E. N. Gilfillan
by Elliott & Hopkins
Atty's



Witnesses.
Wm. M. Rheem
Wm. J. Henning

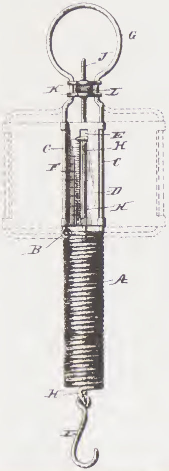
Inventor
Wm. N. Pelouze
by Elliott & Hopkins
Atty's

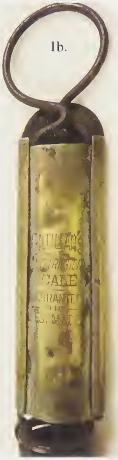
So there you have it. Essington Newell Gilfillan was a busy chap who over twenty five years or so was granted many patents, quite a number being for scales or scale related items. It is my assumption that for a period of time between 1889 and 1898 his principal business was manufacturing scales first as The Chicago Spring Balance Co. and latterly as The E. N. Gilfillan Scale and Hardware Co. It is unclear what the business arrangement between Gilfillan and Pelouze may have been. Perhaps Pelouze purchased Gilfillan's scale business or on the other hand he may have simply purchased a number of scale related patents. We do know that after 1898 that Gilfillan was still being granted patents for scales and they did not appear to be scales that were ever manufactured or sold by Pelouze. In any event Gilfillan had a significant impact on the scale manufacturing industry, as is demonstrated by the millions of common bow front scales that have been produced by many manufacturers over the past one hundred and twenty years. Finally, I would like to thank Jan Berning and Steve Beare for providing much of the material used in writing this article.

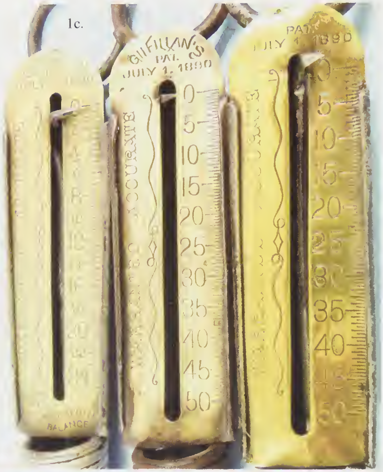
More Gilfillan Scales

BY JAN BERNING

In addition, to the postal scales shown in the above article, Gilfillan was issued or assigned rights to several other scale patents. In addition, it has been discovered that his name, that of Gilfillan Scale and Hardware Co. or similar ornamentation has been found on other examples that we can attribute to him.




1b.


1c.

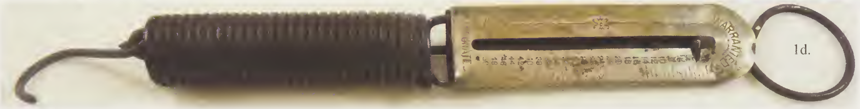

1d.

Figure 1a. The first scale patent issued to Essington Gilfillan was number 431205. It was for an external spring balance, was issued on July 1, 1890 and was assigned to W H & L E Dodge who had patented their micrometer only two years earlier. While the circular dial version has never been seen, the rectangular chart version has been found marked by Gilfillan, Chicago Spring Balance Co and Pelouze.

1b back. & 1d front. Show the earliest version of this straight spring scale. A single wire creates the ring, spring and pointer of this scale. The mark on the back reads *Gilfillan's Anti-Friction Scale Warranted the Best Made.*

1c. More examples of marks found on these scales. A 1908 Pelouze catalog listed capacities of 150, 200, 300 and 400 pounds.

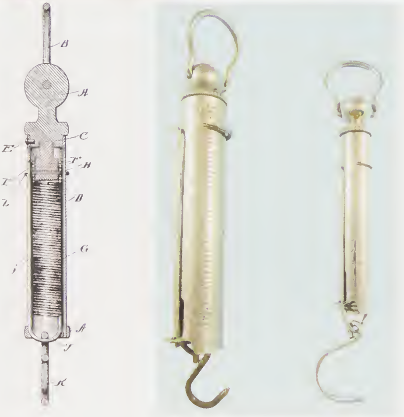


Figure 2. Gilfillan's second patent no. 498711 was issued on May 30, 1893. These small scales are made from nickel plated brass. The larger scale on the left has a 20 lb capacity and is marked above the graduations *Chicago Spring Balance Co.*and on the back *Pat.Appl'd for.* The smaller 10 lb capacity one reads on back *Pelouze Scale & Mfg. Co. Patented.* Pelouze offered these in their 1908 catalog in 2, 10, 20 lb and sterling ones of 10 and 20 lb capacity.

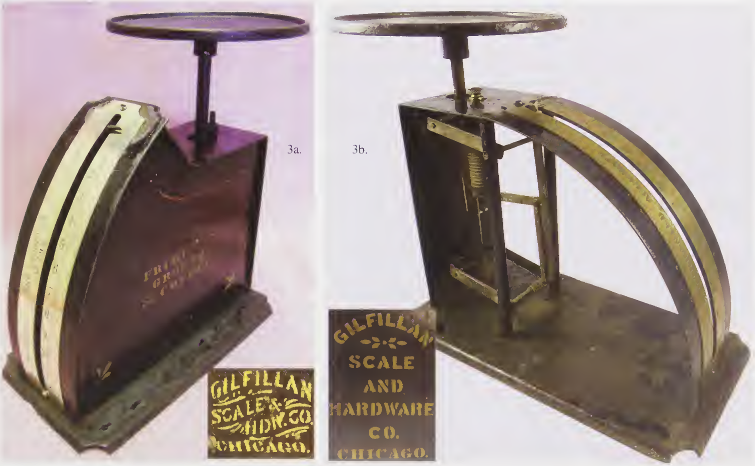

3a.
3b.
FRIME GROUND COFFEE
GILFILLAN SCALE & HDW. CO. CHICAGO.
GILFILLAN SCALE AND HARDWARE CO. CHICAGO.

Figure 3a & b. These two bow front spring scales are family scales based on Patents 561309 shown on page 3672 and D30114 shown on page 3677 in Laycock's article. Many of Gilfillan's scales were used for advertising like this one (3a) named *The Progress* which advertises Prime Ground Coffee on its side panel. The insets show the markings on the back of each scale. Figure 3a Compliments Steve Beare.

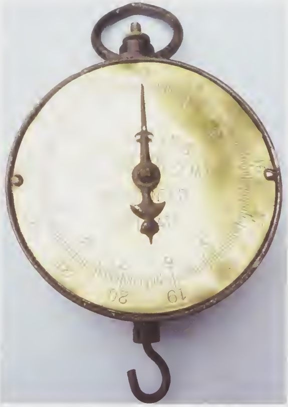


Figure 4. This round faced spring balance marked *Gilfillan's Anti-Friction Scale, Warranted Accurate* has a 26 pound capacity and measures 4⅞" diameter. Ben Smith Collection.

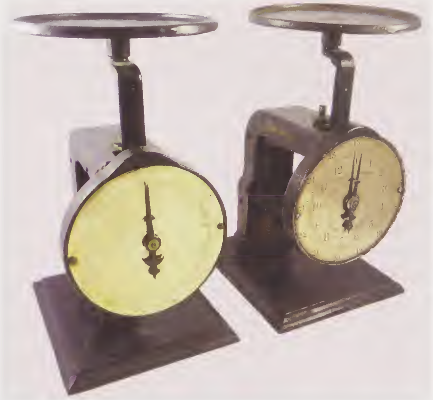
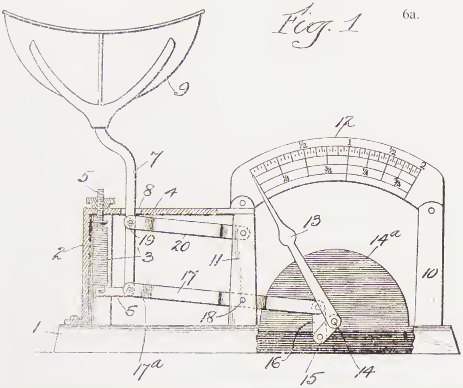
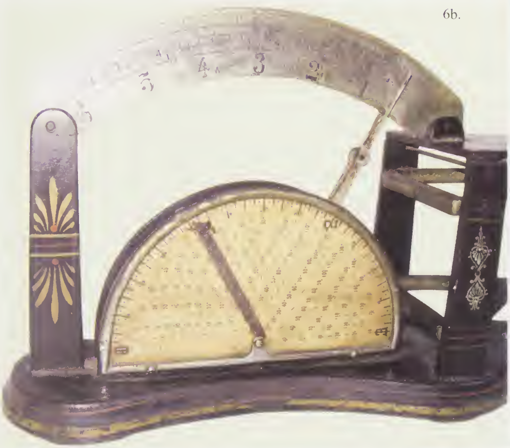


Figure 5. These two family scales are designed just like Gilfillan's smaller postal scale. The postal scales shown in Laycocks article measure 6¼" high while these measure 10¼" high. The left scale face is identical to that in fig 4. The right scale reads *Gilfillan Scale & Hdw Co.* Berning Collection

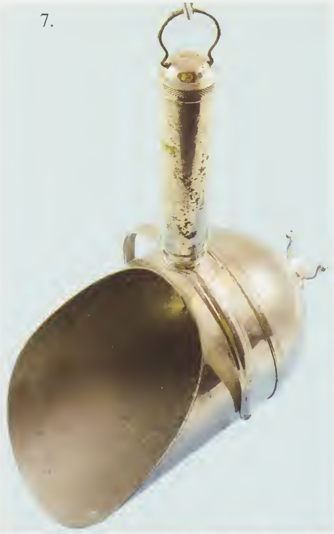
6a.

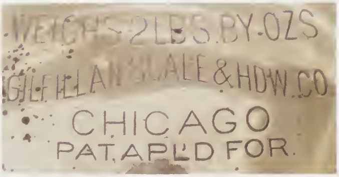


6b.



7.



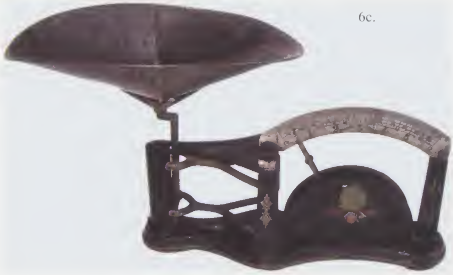


Figures 7 & 7a. Chicagoan James Leary was awarded patent no. 1152824 on September 17, 1915, but it bears the name of Gilfillan Scale & Hardware Co. The patent was applied for on October 8, 1914, after Gilfillan had moved to Syracuse and passed away. More research is needed to determine what happened to his hardware Co. after he moved.

Figure 6 a, b & c. The scale shown on the cover is based on the Gilfillan patent drawing shown at 6a. The computing dial (6b) pointer has a handle on its point in order for the shopkeeper to manually set it in order to easily acertain the selling price of goods based on it price by ounce or pound. The back of the scale(6c) features an eagle and shows only the upper quadrant dial for the customer to view. Note the decorations on the sides of the dial which are typical of Gilfillan scales. It is interesting to note that many of his scales retain most of their original decoration. A trade card in the collection of Jerry Katz shows that scales like this were given as premiums by Climax Baking Powder for shopkeepers who bought 3 cases of the powder.

Jack Mickevich Collection.

6c.



The exact patents for the following two scales have not been located. They are included here due to the fact that the decoration is typical of Gillfillan scales. Perhaps some day we will have concrete proof.

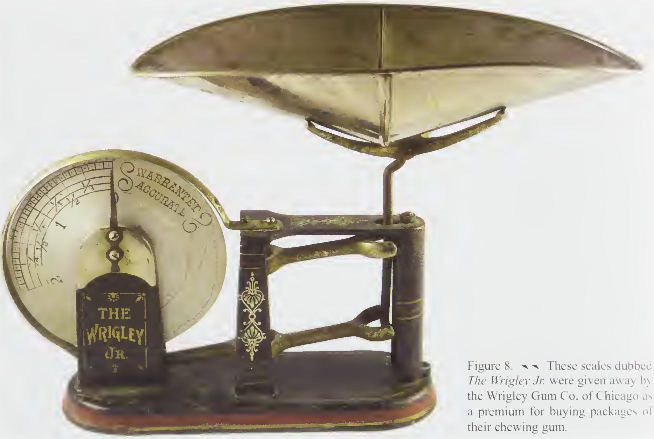
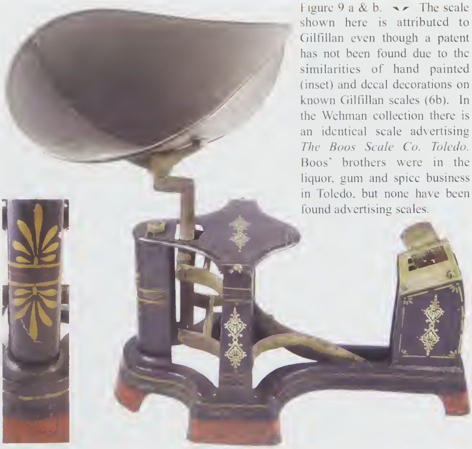


Figure 8. ◄◄ These scales dubbed *The Wrigley Jr.* were given away by the Wrigley Gum Co. of Chicago as a premium for buying packages of their chewing gum.

Figure 9 a & b. ◄► The scale shown here is attributed to Gilfillan even though a patent has not been found due to the similarities of hand painted (inset) and decal decorations on known Gilfillan scales (6b). In the Wehman collection there is an identical scale advertising *The Boos Scale Co. Toledo.* Boos' brothers were in the liquor, gum and spice business in Toledo, but none have been found advertising scales.



Number 125 February 2011

ISASC

INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

A Balanced View

Happy New Year! We hope you are having continual success in finding that long lost scale or weight that you have always wanted for your collection. Our society is doing well, and we are looking forward to the coming year. President Peter Laycock has recently had surgery with follow-up medical treatments and so asked Bob Jibben to write this issue of the newsletter with inputs from the officers. Peter is making good progress and looks forward to seeing everyone at the Denver Convention.

Denver, Here We Come

Our Convention Committee Chairman Bill James reports that the 2011 convention is moving ahead. By now you should have received a convention packet describing the upcoming events in Denver for May 19 through 23. If you haven't received the packet, please contact Denver Convention Chairpersons, Cliff and DeVee Lushbough at 303-366-5471 or [redacted]omcast.net. Cliff and DeVee have organized a Colorado themed convention with mile high atmosphere and excitement. Cliff's collection of scales and weights is a sight to behold. We hope to see all of you in Denver in May!

Pittsburgh is the location of the 2012 ISASC convention. Chairman Les Firth and his team reserved the Sheraton Station Square Hotel in the downtown area as our "home away from home" for May 17 to May 21, 2012. Pittsburgh was selected to commemorate the tenth anniversary of the ISASC Collection. Members will have an opportunity to view our collection and see how this project has grown over the intervening years. In addition, Les promises fieldtrips to several other collections, so mark your calendars now.

Election of Officers

Included in the mailing of your EQM last November was a ballot for the election of officers. Thank you all for your participation. The results have been tabulated, and Bob Jibben has been elected to serve as the new President of ISASC. He will take the reins when Peter Laycock completes his current term at the end of May. In addition, Jerry Katz has been reelected Vice President and Carol Hayden will continue as Secretary. All three will serve for the term from June 1, 2011 to May 31, 2014. Congratulations to the elected officers, and thank you for your continued dedicated effort on behalf of the society.

Membership Update

We have concluded our 2011 membership renewal drive and the results are very positive. During the initial collection period 136 members took advantage of our Bonus Perk offer by having their dues paid by December 1st. We are very happy this program was so well received and are exploring possibilities of offering a similar feature for next year. We have 225 current members as of the beginning of February, and we are still waiting to hear from a few folks. We have had some resignations mostly due to health and age factors. We continue to get an average of one or two new members per month. Our Membership Chairperson Shirley Schmidt and all the officers want to thank everyone for their response and hope that you continue to enjoy our Society. If you have any suggestions, Shirley says to please feel free to contact her by phone at 810-376-4438 or ssmidt@avci.net. Currently we are planning to implement several suggestions for membership that have come from our members.

What's New on the Website?

Carol Hayden is excited to announce that the new and expanded *Scale Tutorial* has been posted to our website www.isasc.org. It can be accessed from the menu at the top of the Home page. This addition completes almost two years of work in redesigning the website with updated software. She wishes to thank our webmaster, Mike Souders, for all his help with technical advice and expertise. Mike's knowledge of graphic design played a big part in the overall look of the website. Carol says we all owe a very big thank you to our editor Jan Berning for the wonderful scale photos on the website that she provided and edited. Be sure to check out the slideshow on the Home page to see what scale pictures have been added. The goal is to change out a small selection of slides on a random basis to keep it interesting.

ISASC Collection Report

Mary Anne Murphy, our Collection Development Chairperson, is pleased to report that in addition to the scales acquired in response to our Capital Campaign solicitation letter, we received a number of other donations in 2010. Chuck Lamlein sent us a group of Vermont scales by Howe and Fairbanks. Dale and Donald Goldman contributed a collection of miniature and toy scales. Jerry Katz donated some additional ephemera. Steve Barnett gave us twenty-five copies of *Equilibrium*.

Kurt and Ann Beyreis, Les Firth and Mary Anne spent several days unpacking, photographing and working on the display of the collection. They reviewed the entire collection for duplicates to be sold and began preparing groups of duplicates for sale through a variety of local auction houses. James Reeve completed selling a group of duplicate items for us on eBay.

We have a number of significant donations in the pipeline, so we expect 2011 to be an active year as well. Many thanks to everyone who has contributed in one way or another to the exciting growth of the collection. We are looking forward to showing how far we have come in ten years at the Pittsburgh Convention in 2012.

Keeping Up With the Times

Last summer we took a giant leap forward into the world of modern technology and started accepting PayPal on our website for Research and Reply. The results have been very successful. Treasurer Kurt Beyreis and R&R Liaison Jerry Katz report that in the first half of 2010 R & R transactions were running at the rate of just under two per month. For the last six months of 2010 the monthly rate was nearly five and a half times that amount. This translates into added income for the Society. We then offered PayPal as an alternative way to pay dues. Our Canadian and overseas members have been especially glad, since PayPal has made it significantly easier and less expensive to pay their annual dues. In total, we have collected nearly $3400 by PayPal from all sources including R & R, membership dues, donations and Library List purchases. We are delighted with this kind of success.

Capital Campaign Update

Les Firth continues his work as Chairperson for our Capital Campaign for the ISASC Collection. We want to thank all the members who have generously donated to this project. Please find his report on a separate sheet enclosed in this mailing. This is an on-going campaign, and we welcome contributions any time during the year.

Equilibrium

Editor Jan Berning has several articles ready for publication, but the ideal situation is to have many articles of different lengths waiting in her files for the perfect time to insert them into a manuscript. No article is too long or short, as we need all types and lengths of articles. Jan says there are several ways that you can contribute to EQM. You can send a picture of your prized scale for use in Showcase or jot down a short narrative of how you started collecting. Consider writing a longer researched article on a scale, scale maker or scale company. Anything of any length on any subject related to scales, weights, measures or their ephemera can be used. You do not have to be a professional writer to contribute to your magazine. If you have an idea for an article, but aren't sure how to get started, Jan can help direct you to the resources you need to accomplish the task. We will work with you to get you published!

Invitation to Pittsburgh

Member Utz Schmidt started thinking about the warm receptions our members received when we visited the conventions of our ISASC Euro sister chapter and the German Scale Society. He wanted to repay their hospitality in kind, and he went to the board with his proposal. After the board gave him their full support, Utz wrote an invitational letter to the Presidents of both organizations for them to present to their membership to invite their members to attend our convention in Pittsburgh in 2012. Over the years we have had members of both the Euro Chapter and the German Society come to our conventions, and it has always added an interesting aspect to our conventions. This time we have extended an official invitation to all their members. Utz has gone one step further and offered his services as a travel agent and tour guide for any of the visitors who are interested in a bus tour of several nearby states after the convention. We hope we are able to meet many fellow European scalies in Pittsburgh.

License Plate Round-up Jibben Style

A few years ago when I retired, like Peter, I made the rationale that I needed a pickup for all those new things I would be doing, like hauling golf clubs around and picking up some of those hard-to-haul scales. I found a year old Ford Ranger pickup with extended cab and fell in love with my dream. Of course, what's a pickup without the correct license, so I invested in a vanity plate "SCALES1" as Scales was already taken. Then one morning on the way to golf about 5:30 AM, as I ran out to the pickup, a runner stopped me and asked is your name SCALES? When I said no, she said, that's good, because I am in a nasty lawsuit with someone named Scales.

My pride and joy pickup, which I drove to the Chicago Convention with Matthias Hass from Germany, suffered a fatal blow. One morning about 2:30 AM there was a loud crash outside. The police came to the door, and I in my pajamas went out to see my pickup on the boulevard with both back wheels sideways and the box crushed. A drunken neighbor kid had come out of the alley, hit my neighbor's car, and then my pickup truck. Always nice to see all the neighbors in pajamas. Now, "SCALES1" is on my new love, a Honda Element.

Chapter Meeting, Anyone?

Several years ago Austin members Judy and Eric Soslau and Carol and Bob Hayden decided to decree their regular get-togethers as the *Northwest Austin Chapter of the Central Texas Division of the International Society of Antique Scale Collectors.* As charter members they made it a policy that anytime another ISASC member came to visit, they would convene a chapter meeting in the visiting member's honor. Such was the case when Jan and Bill Berning came to Austin last November to pick up a load of lollipop scales. Jan and Bill spent three days in Austin, and the time was dominated by scale talk and activities. Jan and Bill used the opportunity to photograph scales from both collections for inclusion in their third edition of *Scales: A Collector's Guide.* It gave the Soslaus and Haydens a chance to dust off some scales and learn more about their collections from the Bernings. The visit was topped off with a dinner celebration at their favorite local Chinese restaurant. After a great visit, Jan and Bill loaded up the scales and headed back to the North Country. Oh, did we mention, that Jan loved the balmy weather and wanted to spend the winter in Austin. The Soslaus and Haydens have entertained other ISASC members and always enjoy sharing and showing off their collections and Austin. They extend the same courtesy of convening a chapter meeting anytime another member is in the area. With just a little advance notice, all are welcomed.

A Geographical Directory of Weights and Scales

Norman Biggs, President of our Euro sister chapter, forwards the following: For many years I have been collecting information about the verification marks stamped on weights in the British Isles. In order to discover when, and by whom, the marks were stamped, it is necessary to begin by studying published sources, such as local directories. Additionally, Christine and I have spent many hours in County Record Offices trawling the unpublished records. This has enabled us to build up a fascinating picture of the inspection of weights and measures since the introduction of the Imperial Standards in

1826. It also became clear that the picture would be incomplete without information about makers and sellers of scales and weights in the various localities. and this information is now included in our data files.

This is an ongoing project. which can be never be 'complete', but by the beginning of 2009 I felt that the time had come to make our information available more widely. It has been collected on a geographical basis. using the traditional counties. Now. at the beginning of 2011, there are twenty counties in a state that is just about presentable. and the material is available on my personal website: http://www.maths.lse.ac.uk/Personal/norman .

Other counties. and more explanatory material. will be added regularly. Please let me have your comments and suggestions. It is likely that in due course the material will be made available commercially. so take advantage of it while it remains free!

Welcome To New Members

We would like to take this opportunity to welcome the following new members and encourage them to contact any of our members should they have questions.

Don & Kathy Rogers	Bennett, CO
Michael & Linda Cameron	Paradise, CA
Francisco Vallés	Mallorca-Baleares, Spain

Member Request

Howard Cheifitz is searching for the following items manufactured by Howard & Davis which were parts of sets of standards used by Massachusetts counties, cities and towns c1850 until the early 1900's. 1. Nickel-plated cylindrical weights: 1 and 2 drachms, 1/4,1/2,1,2, 4 & 8 oz.; 1, 2, 4, 5, 10, 20, 25 & 50 lbs. The largest five with ring handles, the rest with screw top handles. All with flat bottoms. All marked "CM" for Commonwealth of Massachusetts. 2. A cast iron yoke with gimbals (used with dry measures for accurate leveling). 3. Also interested to know if any members are researching Howard & Davis or early American standards of weights and measures. Howard can be reached at: phone: 914-523 6598 or email measureman1@gmail.com.

Enclosures

Please find two enclosures in this mailing. Member Brook Paige sent everyone a copy of the Howe Scale Exhibit Round-up Sheet. Our Convention Chairman Cliff Lushbough designed a bookmark showcasing the events of the Denver Convention.

We are looking forward to Denver in May and hope to see you all there.

Robert Jibben
Vice President ISASC

The Howe Scale Company Exhibit at the Vermont History EXPO 2010

The episodic history of Howe Scales can be traced to designs first conceived at the Vergennes Scale Works in Vermont. When the scale works suddenly closed in 1853; the young inventors, Francis Strong and Thomas Ross, found a worthy partner in John Howe, Jr. of Brandon, Vermont. The Howe Scale Works would flourish in Brandon for nearly thirty years before a series of business reversals lead to the removal of the business to Rutland, Vermont where the company would prosper and grow for nearly a century.

In the late 1800's, manufacturers promoted their products at industrial and agricultural exhibitions. At the Vermont History EXPO, we recreated a sales display typical of those the Howe Scale Company presented at numerous trade fairs throughout the country.

Under our period wood and canvas tent, we displayed an extensive array of Howe Scales of every category and size along with a wide variety of advertising and sales ephemera.

Peter DiScala, the talented antique sign maker from Doylestown, Pennsylvania, created an outstanding collection of signs and graphics which significantly enriched our period display. Peter always amazes me with his ability to take my meager sketches and create wonderful period signage.

My artist friend, Mary Simpson from Vermont's Northeast Kingdom, created an outstanding linoleum block print to commemorate our Howe Scale exhibit. Mary is a wonderful and creative resource and her talent has added richly to each of my History EXPO events. Mary visited with us on Saturday to sign copies of her prints and discuss her work and art of printmaking with our EXPO visitors.

I was overwhelmed with the support of my scale collector friends who rallied to assist me with the exhibit. Many of these fellows work in the scale industry and their knowledge of the history of the industry and the mechanics of scale mechanisms brought invaluable insight which they enjoyed sharing with our guests. Walter Young, the last president of the Howe Scale Company in Rutland, traveled from New Jersey to visit with us. Walter was overwhelmed with the enthusiasm and interest in Howe Scales, a quarter century after the factory closed its doors in Vermont. Dave Farnham, Stan Garrett, Mary & Jerry Katz, Lyman Orton, Lou Procopio, Larry Violette and Vivian & Fred Webster traveled hundreds of miles to help out. This exhibit was a real workout for everyone, erecting the tent, setting up our displays and signage, then unloading and setting up nearly 100 scales, some weighing over 1,000 pounds! After the show Sunday, everyone volunteered to stay on and help out with packing up - a major effort which took until dusk to complete!

Fred Webster, our incomparable history friend, volunteered to help out with my sales reenactment. Fred portrayed the frugal, "rock-ribbed" Vermont farmer who, with pitch fork in hand, was possibly the most difficult customer the smooth talking Howe salesman had ever encountered. In the end, "Farmer Fred" was convinced of the value of using an accurate Howe platform scale on his farm and the sale was made!

Tess Taylor and the folks at the Vermont Historical Society did a wonderful job organizing and promoting their History EXPO. Nearly 4,000 visitors from all over the country traveled to the Tunbridge World's Fairgrounds to enjoy over 100 outstanding exhibits covering every aspect of Vermont History.

Over the past few years, my involvement with the History EXPO projects has been an absolute delight. I have met so many wonderful people from many varied fields that I would never have otherwise become acquainted with and this year was no exception - I met and worked with new folks and old friends alike and the quality of our presentation was a testament to their involvement and hard work.

I hope you will enjoy looking over this little photographic review of our Howe Scale Company display. THANKS to all the brave souls who were willing to help out with this project, their selfless efforts were TRULY APPRECIATED !

Brooke Paige

Our Howe Scale Exhibit at the Vermont History EXPO 2010

I would like to thank all the folks who helped make this presentation possible:
Steve Bronstein - Blackthorne Forge - Marshfield, Vermont
Bob Benz and the Staff at the Billings Farm and Museum - Woodstock, Vermont
Blaine Cliver - Brandon Historical Society - Brandon, Vermont
Jim Davidson - Rutland Historical Society - Rutland, Vermont
Peter DiScala - Strafford House - Doylestown, Pennsylvania
Prudence Doherty - University of Vermont - Baily/Howe Library - Burlington, Vermont
Dave Farnham - Farnham Scale Services - Williamstown, Vermont
Stan Garrett - Scale Services - Syracuse, New York
John Ianelli - Archway Press - Sharon Hill, Pennsylvania
Mary and Jerry Katz - International Society of.Antique Scale Collectors - Downingtown, Pennsylvania
Lyman Orton - Vermont Country Store/Vermont Scale Museum - Weston, Vermont
Donna Paige - My Very Patient Wife - Washington, Vermont
Lou Procopio - Procopio Scale Sales and Service - Southbury, Connecticut
Mary Simpson - Our Favorite Vermont Artist - Lyndonville, Vermont
Scott Tower - Vermont Civil War Historian - Underhill, Vermont
Larry Violette - Fairbanks Scales - Rehobeth, Massachusetts
Vivian and Fred Webster - Webster's Farm Museum - Coventry, Vermont
Walter Young - Emery/Winslow Scales - Waldwick, New Jersey
Paul Carnahan, Marge Strong & Bernadette Harrison -Vermont Historical Society Library -Barre, Vermont
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INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

ISASC Capital Campaign Donors

Fall and Winter 2010 – 2011

Thank you to the 40 donors listed who have donated $11,738 in cash and $80,000 plus in appraised value of scales to our ISASC Collection. These gifts were in direct response to our recent appeal letter. This brings the total financial support of the collection to over $120,000. The ISASC Collection is nicely displayed in Pittsburgh. You are welcome to visit – especially during the 2012 annual ISASC Convention and see over 2,500 scales.

Thanks for your support,

Leslie N Firth
Leslie N. Firth
Chair, ISASC Capital Campaign

$20 - $50
Eugene Buday
Arline Jacobson
Lawrence B. Violette
Virginia Cattle
Joseph Keogh
Robert O. Foster
Dale Lewis

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$101 - $200
Stephen F. Barnett
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$201 - $300
Kurt Beyreis
William A. Simpson
Phil Wehman

$301 - $500
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Shirley & Utz Schmidt
James A. Unruh
Charles M. Lamlein
Lyman Orton
Lawrence F. Stein
Linda Lowenstein
Andrea, Jeff & Alex Roesch
Rachel & Michael Stein

$800 - James B. Harrison
$1,055 - Norman Cima
$2,500 - Leslie N. Firth
$3,366 - Scales – The Family of Robert M. Stein
$76,669 - Scale Collection – Patrick D. Kelly

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Cover Picture

This unmarked roberval postal is typical of S Mordan & Co's most elaborate decorative art. Its oval Matlock Marble plates, blue enamel dots and etched A-frames and base, make it an outstanding example of his artistry. The cabling round the weight hole and the base is very characteristic of Mordan's work. See EQM 3293-3305 for more examples of Matlock marble.

The oblong base measures 7½" across. It is 6½" tall and holds 6 weights of 8P, 4P, 2P, 1P, F and F. The P stands for Postages, a unit of weight of ½ oz. Postages were used to determine postage rates from 1840-1865. F [foreign] refers to the smaller allowance for letter going abroad.

Collection of Kurt & Ann Beyreis

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Article submissions are preferred in MS Word with Times New Roman Font size 12.
Photos are best in 300 DPI Jpegs in a separate file with a maximum of 3 photos per Email.

Counting or Estimating?

BY ROBERT MYERS

This article was inspired by Diana Crawforth-Hitchins' recent discussion of some Avery scales[1]. These scales were variously known as computing, counting, costing and estimating scales, and they were used in a variety of different ways, some of which were rather complicated. Diana asks if any member of ISASC can explain the relevant procedures. I was with Avery and Pooley in the 1960s and encountered some of these machines, and recently my interest was rekindled when I acquired a fine example of Model 345 in its original glass case (Figure 1).

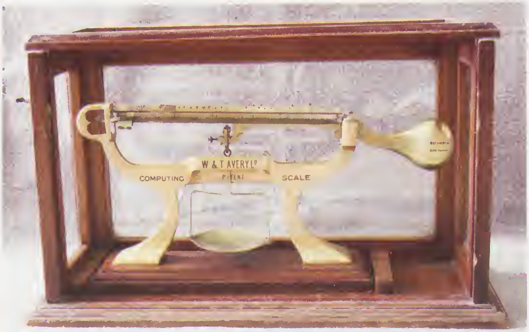


Figure 1. Model 345 scale in its glass case.

It must be noted that there is a clear distinction between a machine intended for counting and one intended for estimating. Counting machines were used in factories for issuing batches of items or stocktaking. They might also be used in shops for selling items in bulk, when it was customary to batch up the items in advance. Estimating machines (such as the Model 345) were used in factories as part of the costing process, to assess the quantity of raw material required to make a hundred or a gross. The value of the material per pound would be known, so it was simple to calculate the cost of the material required. The confusion between counting and estimating is partly due to Avery's practice of using the term 'computing scale' for either type of machine (and indeed for quite different machines such as price-computing scales). Further clarification will be given in the later sections of this article.

The Model 345 Estimating Scale

Two versions of the Model 345 are illustrated on pages 3594 and 3595 of Diana's article. The one shown in Figure 1 above is similar to the first of those, but it has some special features (Figure 2). There are two graduated scales, the front one graduated 0-5 lb in steps of one ounce, and the other graduated 0-50 lb in steps of 5lb. A sample of 10 items is placed in the pan, and using the two scales together the weight of 100 gross in pounds and ounces can be read off.

One strange feature is the statement that there are 156 ARTICLES TO THE GROSS. A gross was normally 12 x 12 = 144 items, so presumably the extra items were an allowance for wastage, analogous to the old 'bakers dozen' of 13 loaves. It would be interesting to discover who was using this strange measure in the 20th century. In fact it is quite surprising to discover that some firms still counted their stocks in dozens and grosses in the 1960s.

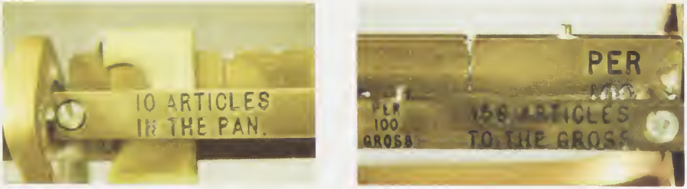


Figure 2. Markings on the scale in Figure 1.

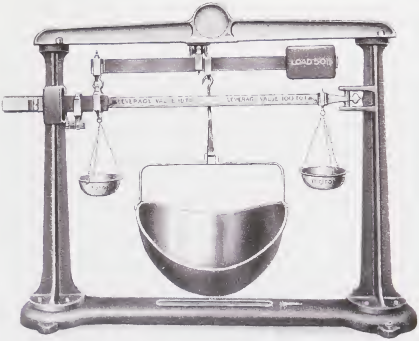


Figure 3. ➘➘ Model 156 as in the 1885 catalogue.

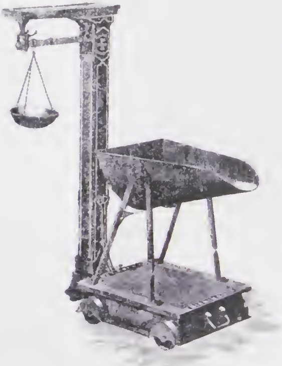
Given that the gross was 156 items, 100 gross would be 15600 items, and since there were 10 items in the pan, the ratio of the machine was 1560:1. I checked this by putting a small weight of 1 dram in the pan, which gave a reading of 6 lb 1½ oz – that is, 1560 drams. Since the capacity of the machine is only 50lb, the load in the pan cannot exceed about 8 drams. This implies that the individual items being estimated (10 in the pan) did not exceed 0.8 drams each, and so they must have been very small.

Developments at Averys from 1880 to 1915

A good idea of the development of counting and estimating machines can be obtained from the Avery catalogues of the period, specifically those dated 1880, 1885, 1906, and 1915/16. Unfortunately there are frequent changes of terminology and a baffling numbering system. Here I shall mention only a few highlights.

The scale illustrated in Diana's article on page 3597 (Fig 5a) was Model 375, and was described in the 1880 catalogue as a 'Computing Balance for ascertaining the weight of grosses by the weight of one article, complete with scale'. It is not clear from the text or the illustration whether it could also be used for weighing letters, but in the 1885 catalogue it was described as a 'Computing and Letter Balance Combined'. In the 1906 catalogue, the name has changed again, Model 375 now being called 'Avery's Estimating Balance'. It was available in several sizes.

Figure 4. ➚➚ Model 350.



A different kind of machine, designed for counting rather than estimating, was listed in the 1885 catalogue as Model 156. It was a portable platform scale of 4cwt capacity, shown under the heading 'Calculating Machine' (Figure 3). This was a ratio-counting machine with a large pan for the batch and a small pan for the sample. There were two pivot points for the small pan, providing ratios of 50:1 or 72:1. The procedure was to place two items in the small pan, thus balancing either 100 or a gross.

The 1906 catalogue showed a larger variety of counting machines, including two platform machines. The Model 156 shown in Figure 3 was now called 'Avery's Counting Machine', and it was joined by a similar machine, Model 351, called 'Avery's Specially Strong Counting Machine'. Two other counting machines of a very simple type could be used to count any quantity required. Whereas most counting machines have at least one small pan for ratio-counting, these did not. One of them, Model 350 (Figure 4), had a single pan on the end of a beam, the beam having a sliding poise that could be locked at any point on the beam. To use this machine, the quantity required was hand-counted into the pan, the poise was positioned to balance, and more batches of the same size could then be weighed out. The problem was that if you wanted grosses, the initial gross had to be hand-counted, a tedious process.

The 1915/16 catalogue had a complete section devoted to counting and estimating scales. Over 20 different machines were illustrated, most of them with ratio-counting features, and the rest described as estimating or costing balances. The misleading term 'computing' appears to have been dropped. An important innovation was the 'Combination Counting Machine' which has two ratio-counting pans as well as the main pan. This deserves a more detailed description.

The Model 359 Combination Counting Machine

The Model 359 combination counting machine was available in two versions, one for counting in hundreds and tens, and the other for counting in grosses and dozens. Averys applied for a Board of Trade certificate for this machine in 1921, but the published notice[3] shows only the 100 and 10 version (Figure 5).

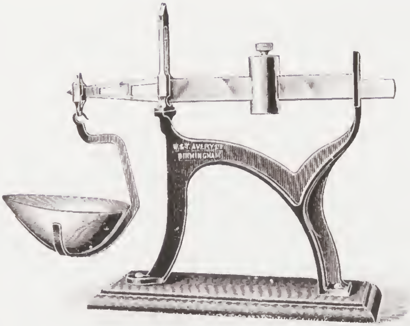
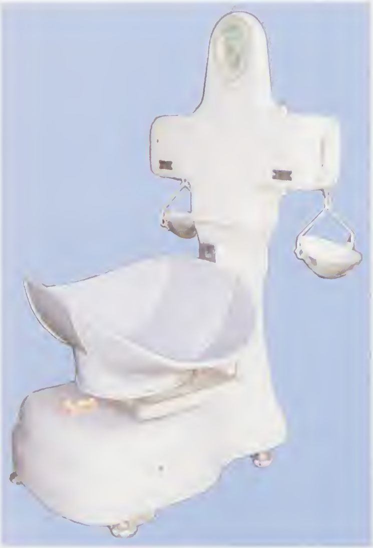


Figure 5. Model 359 with 10:1 and 100:1 ratio pans.

Figure 6. A later version of the Avery combination counting machine with 99:1 and 9:1 ratio pans.



At some later stage, a version with 9:1 and 99:1 ratios was introduced. When I first became an industrial salesman, I could not understand the reason for having two versions, similar in all respects other than the ratios of 10:1 and 100:1 or 9:1 and 99:1. Both versions were sold to my customers, so obviously some firms needed them. Eventually it was explained to me that the 10 and 100 version was used for issuing a given number of components from the store, while the 9 and 99 version was used for stocktaking, when an unknown number had to be counted. The issuing procedure was easy. If batches of 480 items were required, 4 were placed in the 100-pan and 8 in the 10-pan; so that the machine would balance with 480 in the main pan. This could be repeated if more than one batch was needed.

The stocktaking procedure was more difficult to understand. The rule was as follows. Place the unknown number in the main pan, hopefully not exceeding the capacity of the machine. (This frequently happened as the machine did not indicate the actual weight and operators rarely preweighed the items.) Remove a handful of components from the main pan and place them, one by one, into the 99-pan until the position of the balance bar indicates there is one too many. Remove the excess one, and add items from the handful to the 9-pan in the same way. Now take the components from the 99-pan, count them, and return to the main pan: if there were 7, you have 700. Do the same with the 9-pan: if 4 that would give you 40. Finally count those left in your hand, maybe 6. You now have a total of 746. You can do it a lot faster than it takes to read the explanation.[4] I believe that counting in dozens and grosses was still the rule in some firms, and for stocktaking they used a version with 11:1 and 143:1 ratios.

In due course Avery abandoned the Model 359 machine, and offered more compact machines with 'visible weighing' characteristics, - the Models 1207 and 1208 (Figure 5). Charles Brecknell & Co Ltd (an Avery company) continued to produce machines like the old Model 359, which were considerably cheaper than the new ones.

Notes and references:

1. Diana Crawforth-Hitchins, 'Avery Counting Scales' *Equilibrium* (2010:2) pp 3594-3600.
2. The Midland Scale Company transfer on this machine indicates that at some stage it passed through their hands. They did a brisk trade in second-hand/reconditioned machines, which they sold both to the retail trade and to industry. Also, they hired out a considerable number of counting machines at stocktaking time. On occasions, Avery's Birmingham branch drew on this source to hire out MSC machines to Avery customers!
3. Board of Trade Notices, No.178, August 1921.
4. For a general treatment of this counting procedure, see the following note by Norman Biggs.

Note on the stocktaking procedure

BY NORMAN BIGGS

The preceding article by Bob Myers contains a very clear account of how the 'combination counting machine' with 9:1 and 99:1 ratio loads was used. At first sight, it seems that the answer was obtained almost by magic. Bob tells us that a handful of items was removed from the main pan, and distributed among the other pans. For example, if the machine balanced with 7 items in the 99-pan, 4 in the 9-pan, and 6 left over, then the total number in the batch (including the handful removed) was 746.

Of course, the only magic involved was elementary mechanics and arithmetic. The machine (similar to Figure 3 in Bob Myers' article but with leverage values 9 and 99) has two beams, and operates in the following way.

- The poise (confusingly labelled LOAD 50lb) is positioned so that the machine balances when the pans are empty. This means that the mass of the pans and the beams themselves can be ignored.
- The lower beam (Figure 1) is pivoted at A, and the small pans are suspended at B and C, where the lengths AB and AC are in the ratio 1:11. Putting p items in the small pan on the right produces an equivalent load $11p$ at B.

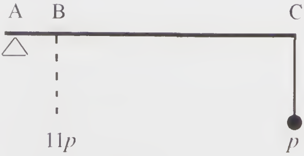


Figure 1

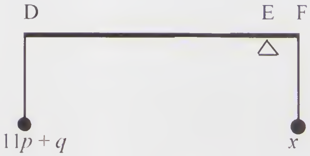


Figure 2

- On the upper beam (Figure 2), D is directly above B. Adding q items to the small pan on the left increases the load to $11p + q$, and since the lengths DE and EF are in the ratio 9:1, the system balances when the number of items in the large pan is $x = 9(11p + q) = 99p + 9q$.

The procedure outlined by Bob Myers can be described as follows:

(1) place the unknown number n of items in the large pan;
(2) remove a handful of h items;
(3) distribute these h items so that the beam balances with p in the right-hand pan, q in the left-hand pan, and r left over.

The number in the large pan is thus $x = n - h$, where $h = p+q+r$. Substituting in the equation $x = 99p + 9q$ we get $n - (p+q+r) = 99p + 9q$, that is $n = 100p + 10q + r$. Hence p, q, and r give the numbers of hundreds, tens, and units in the batch.

Review

Antichi Pesi Del Sud Italia by Michele Panebianco.

Michele Panebianco is a collector of weights living near Catania on Sicily in a small village at the Ätna volcano. For many years he has collected weights from the former Reign of the "Two Sicilies" or the combination of the kingdom of Naples plus Sicily.

He has now published a book containing pictures of his collection plus those of another collector from Palermo.

The book contains 96 pages of historical information about the weight system in South Italy combined with 70 photos of about 150 weights, making it a good source of information even for collectors who do not understand Italian.

The price of the book is 25 € plus shipping and can be ordered via: Michele Panebianco [mikipan@hotmail.it]. He will then on request deliver bank details for money transfer. The book is available sometimes also via ebay.

DR. LUDWIG-RAMACHER

W.&T. Avery and Ph. J. Maul, How are their coin balances related?

BY MICHAEL FOSTER

How do W&T. Avery's Gold Coin Testers relate to Ph.J. Maul's Counterfeit Coin Detectors? You decide.

The following facts are the result of my study of rockers with 'W&T. AVERY MAKERS BIRMINGHAM' and 'W&T. AVERY LTD MAKERS BIRMINGHAM' on the poise. The history that follows on W&T. Avery was confirmed by the current curator of the Avery Historical Museum, Andrew Lound.[1,2]

The origin of W&T. Avery goes back to at least 1728 with John Barton working as a stilliard or steelyard maker in Digbeth. The business passed on to his son William Bridgens Barton in 1769, and then on to Thomas Beach in 1782. Thomas' sister Mary married his clerk John Avery. As Thomas had no sons, in 1793/4 the scalemaking business passed to his nephew Joseph Balden II. Balden died intestate in 1813 and as his two sons were incapable of running the business (Samuel was only 9 years old and Joseph was mentally ill). William Avery, the husband of Elizabeth Balden, took control of the business.

William Avery brought in his brother Thomas Avery to assist in the running of the business. Up to this point the Avery brothers had been working as mercers and drapers. To understand all of this the author suggests reading Norman Biggs article on *Edward Whitfield and His Relations*[3].

In 1818 the business was renamed, W&T. Avery. From 1817 to 1837 the business expanded and acquired more premises in Digbeth and opened a London branch at 32 Hatton Garden in 1837.

Thomas Avery died in 1824. William Avery died in 1843 and bequeathed the firm to his two sons, William Henry Avery and Thomas Avery II who became the partners in W&T. Avery. In the 1860s Thomas Avery II became very active in municipal affairs and slowly withdrew his capital from the firm, the precise date of his retirement from the partnership being unknown. His brother continued to run the business, but even he began to withdraw capital. In 1870 the company acquired the Atlas Foundry Works in West Bromwich to carry out iron founding.

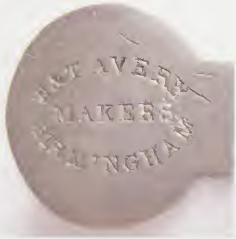
In 1874, on the death of William Henry Avery, the company was placed in the control of his brother Thomas, his brother-in-law Julius Henry Bielby and his wife. In 1881 the firm was 'sold' to William Henry Avery's two sons, William Bielby Avery and Henry Johnston Avery. By 1885 they owned and operated three factories: the Atlas Works in West Bromwich, the Mill Lane Works in Birmingham and the Moat Row Works in Digbeth, also in Birmingham.

In 1891 the business became a limited liability company with a board of directors. William Bielby Avery spent little time with the business. Most of the day-to-day operation was done by his younger brother Henry. Henry died suddenly in 1894. With William Bielby not wanting to run the firm it became a public limited company with shares quoted on the London Stock Exchange and an outsider was for the first time appointed as Managing Director.

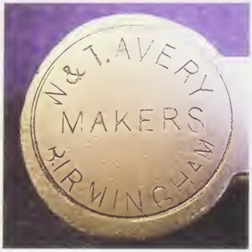
In 1895 the company bought the legendary Soho Foundry in Smethwick, a former steam engine factory owned by James Watt & Co. The new Managing Director, William E. Hipkins moved the existing Avery sites in the Midlands to the Soho Foundry, building in the process the world's largest weighing scale factory. The move, done in stages, was complete by 1899. W&T. Avery Ltd. set up branches in many towns (e.g. 29 Exchange Street, Sheffield, from 1897), and gradually took over many other firms in the scalemaking trade, in some cases retaining the original name.

The basic Avery rocker is made with a nickel-alloy and consists of a poise stamped with 'W&T. AVERY MAKERS BIRMINGHAM' or after 1891 'W&T. AVERY LTD MAKERS BIRMINGHAM'. A blued-steel screw retains the knife-edge pivot, in capped bearing holes on two columns that are integral to the blank cast base. The beam is blank with curved notched matt-gilded platters stamped "1 SOV" and "½ SOV" with gauge slots to help in checking for counterfeits. The cast beam ends with a concentric groove disc finial.

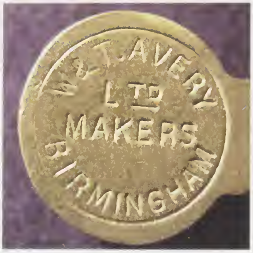
The W&T. Avery sovereign balances have been found with three types of poise stamp maker marks shown below:



Type 1 (before 1882?)
'W&T. AVERY MAKERS BIRMINGHAM'

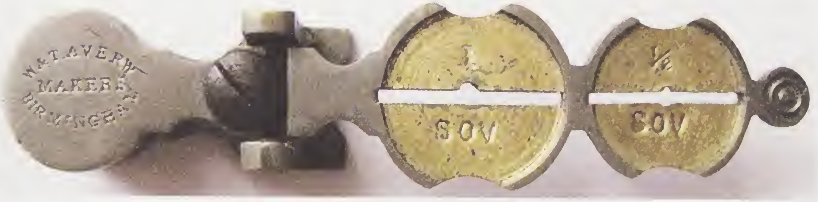


Type 2 (c.1882 to 1891)
'W&T. AVERY MAKERS BIRMINGHAM'

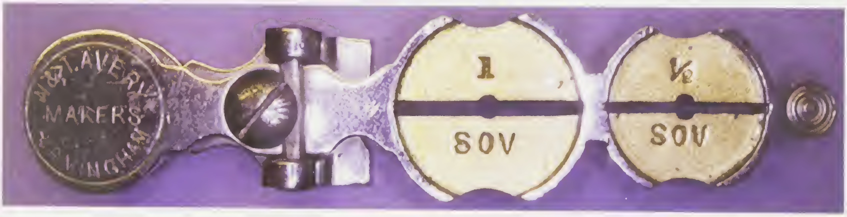


Type 3 (after 1891)
'W&T. AVERY LTD MAKERS BIRMINGHAM'

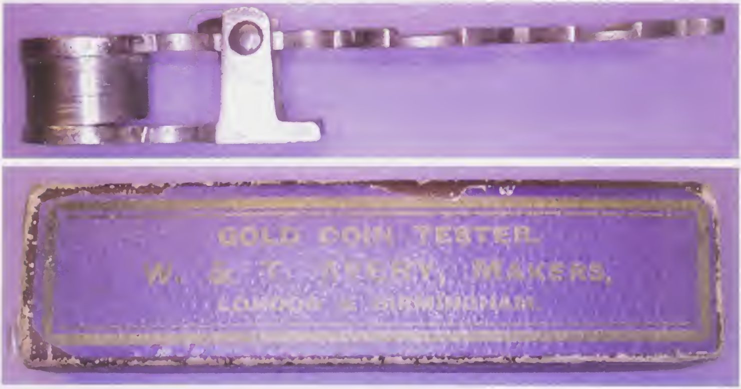
The basic rocker design is the same for all three maker mark stamps as illustrated in the following pictures:



Type 1 maker mark rocker.
Note the blued-steel screw holding knife edge and gilt platters.
Note the 'common quality' matte (dull) finished nickel-alloy



Type 2 maker mark rocker.
Note the blued-steel screw holding knife edge and gilt platters.
Note the 'nickel-plated' shiny (glossy) finish.

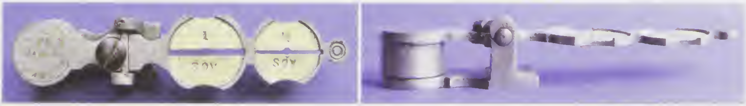


Avery Box with label found with Type 2 maker mark rocker.
Avery's London office opened in 1837 in Hatton Garden.

Box gold coloured label reads: "GOLD COIN TESTER. / W. & T. AVERY, MAKERS, / LONDON & BIRMINGHAM."

Note that this is one of the few examples of an Avery label indicating that they had a London presence.

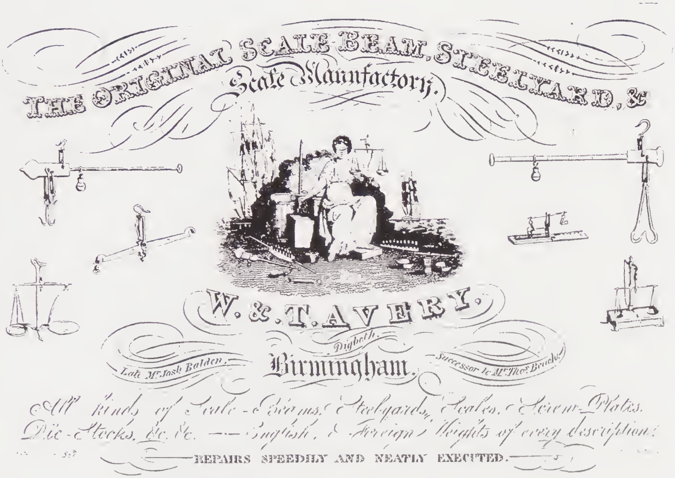
Note that the box interior has a shelf on which the rocker beam rests.



Type 3 maker mark rocker.
Note the blued-steel screw holding knife edge and gilt platters. Note the 'common quality' matte (dull) finished nickel-alloy.

The exact year that W&T. Avery started selling sovereign balances is unknown but possibly critical to answering some of the questions about Avery and Ph. J. Maul who some believe made the balance for Avery.

A W&T Avery advertisment from *Wrightson's Annual Directory of Birmingham, 1829-30* is included below. It shows an Avery folding gold balance to weigh sovereigns and half-sovereigns, labelled a "SMALL POCKET BALANCE". Avery had been making or retailing both folders and equal-arm scales to check gold coins and identify the value of gold lost since they inherited the business. Their competitors, the rocker makers like Harrison and Smith, were selling sovereign rocker balance products that also identified counterfeits.



THE ORIGINAL SCALE BEAM, STEELYARD, &
Scale Manufactory.
W. & T. AVERY.
Late Mr. Josh Baldwin, Digbeth, Birmingham. Successor to Mr. Thos Beach.
All kinds of Scale-Beams, Steelyards, Scales, Screw-Plates, Die-Stocks, &c. &c. — English, & Foreign Weights of every description.
REPAIRS SPEEDILY AND NEATLY EXECUTED.

W&T. AVERY Advertisement, Wrightson's 1829-30.

Perhaps Avery started to look at the sovereign rocker business. Unfortunately, there is currently no evidence that Avery sold Sovereign rockers until about 1882.

W & T. Avery listings from a few Birmingham and London Directories:

W&T AVERY (Birmingham)

1815	W&T Avery, (late Baldwin, successor to T. Beach) manufacturers of all sorts of scales, scale beams, steelyards, copper and brass scales, money scales, &c., 11 Digbeth St, Birmingham, Reference: *Wrightson's New Triennial Directory of Birmingham, 1815*, p.6, p.163 under Scale and Steelyard Makers.
1818	W&T Avery, (late Baldwin, successor to T. Beach) manufacturers of all sorts of scales, money scales &c. Digbeth, Reference: *Wrightson's New Triennial Directory of Birmingham, 1818*, p.7, p. 165 under Scale and Steelyard Makers.
1823	W&T Avery, (late Baldwin, successor to T. Beach) manufacturers of all sorts of scales, money scales &c. Digbeth, Reference: *Wrightson's Triennial Directory of Birmingham, 1823*, p.7, p. 178 under Scale and Steelyard Makers.
1828-29	William and Thomas Avery, scale beam makers, weighing machines & steelyard, screw plate manufacturers, 11 Digbeth, Birmingham, Reference: *Pigot & Co.'s National Commercial Directory, 1828-29*, p.767, p.803 under Scale Beam Makers.
1829-30	W&T Avery, scale beam, steelyard, screw plate and patent weighing machine, &c. manufacturers, 11 Digbeth, Birmingham, Reference: *Wrightsons's Annual Directory of Birmingham, 1829-30*, Advertisement p.4, p.5, p.152 under Scale Beam Makers.

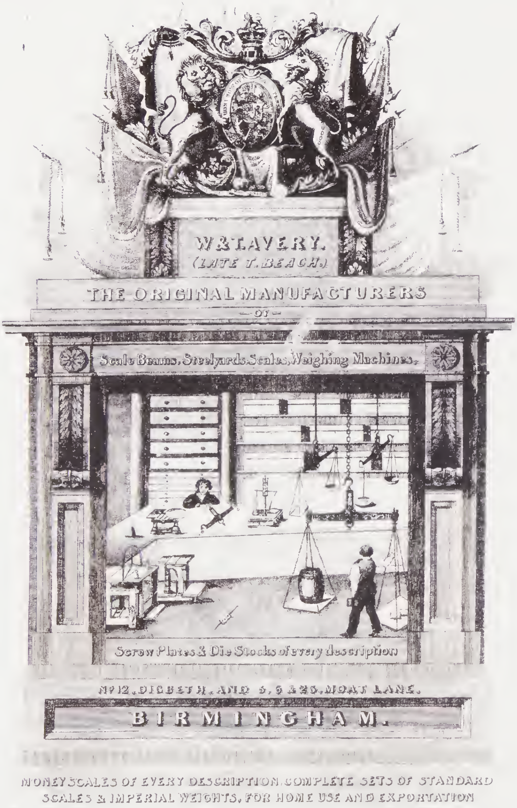
1830	W&T Avery, scale beam, steelyards, screw plate and patent weighing machine, &c. manufacturers, 11 Digbeth, Birmingham, Reference: *The History, Topography and Directory of Warwickshire*, by Wm. West, 1830, p.305, p.452 under Scale Beam Makers.
1833	W&T Avery, scale beam, steelyard, screw plate and patent weighing machine, &c. manufacturers, 11 Digbeth, Birmingham, Reference: *Wrightsons's Annual Directory of Birmingham, 1833*, p.5, p.119 under Scale Beam Makers.
1835	William and Thomas Avery, manufacturers of scales, scale beams, steelyards, patent weighing machines, screw plates, die stocks, English and foreign weights &c., 12 Digbeth, Birmingham, Reference: *The Directory of Birmingham, 1835.*
1835	William & Thomas Avery, scale beam makers, steelyard & screw plate manufacturers, 11 Digbeth, Birmingham, Reference: *Pigot and Co.'s National Commercial Directory for 1835*, p.64, p.566 under Scale Beam Makers, p.579 under Weight Makers - Foreign and English.
1839	William and Thomas Avery, manufacturers of scales, scale beams, steelyards, patent weighing machines, & c., 12 Digbeth, Birmingham, Reference: *Wrightson's Directory of Birmingham, 1839*, p.17.
1842	William and Thomas Avery, manufacturers of scales, steelyards, patent weighing machines, & c., 11 Digbeth, Birmingham, Reference; *Pigot & Co.'s Royal National and Commercial Directory and Topography, July 1842*, p.14.
1847	William & Thomas Avery, 11 Digbeth, Birmingham, Reference: *Slater's Classified Directories, Birmingham, 1847*, p.25 under Mill Makers, p.33 under Steel-Yard Makers, p.38 under Weight Makers.
1849	William Henry & Thomas Avery, scale beam, steelyard, screw plate and patent weighing machine, &c. manufacturers, 11 Digbeth, Birmingham, Reference: *Birmingham History and General Directory, White & Co,1849*, p.95. Thomas Avery, house: 145 Highgate. William Henry Avery, house: Balsall Heath.
1850	William Henry & Thomas Avery, scale beam, weighing machine and steelyard manufacturers, 11 Digbeth, Birmingham, Reference: *History, Gazetteer and Directory of Warwickshire, White & Co., 1850*, p.95. Thomas Avery, house: 145 Highgate. William Henry Avery, house: Aleaster Rd, Balsall Heath.
1850	William & Thomas Avery, manufacturers of scales, English & Foreign weights, road and all weighing machines, steelyards, sugar & tea mills, 11 Digbeth, Moat Lane, Birmingham, Reference: *Post Office Directory of Birmingham, Kelly & Co, 1850*, p.38, p.61, p.97 under Commercial Directory.
1852-53	William & Thomas, scale beam, steel yard, and weighing machine manufacturers, 12 Digbeth and Moat Lane, Reference: *Slater's General and Classified Directory of Birmingham, 1852-53*, p.14 p.116 under Steelyard Makers, p.200 under Weight Makers. Thomas Avery, house: 145 Highgate. William Henry Avery, house: Balsall Heath.
1858	W&T Avery, mfrs of scales and steelyards, English & foreign weights, weighing machines, sugar and tea mills, 12 Digbeth, 5,6 and 7 Moat Lane and Mill Lane. Reference: *General and Commercial Directory of Birmingham, Dix & Co, 1858*, p.50, p.464 under Scale beam and Weighing Machine Mfrs. Thomas Avery, house: 142 Highgate. William Henry Avery, house: 9 Chad Rd. Edgbaston.
1862	William & T. Avery, scale and weight makers, Digbeth, Reference: *Business Directory of Birmingham, Morris, 1862*, p.188.
1867	Wm & Ths. Avery, scale manufacturers, 61 Digbeth, Mill Lane and 5 to 7 Moat Lane, Reference: *Post Office Directory of Birmingham, Kelly's, 1867*, p.73, p.165.
1875	Wm. & Thos. Avery, scale, beam and weighing machine makers, Steelyard makers, patentees, 12 Digbeth, Moat Lane and Mill Lane, Birmingham, Reference: *White & Co.'s Commercial & Trades Directory of Birmingham, Vol. II, 1875*, p.1749.
1896-97	Avery, W&T. Ltd, Scales and Weights, Weighing machines, Digbeth Birmingham, Reference: *Peck's Trades Directory of Birmingham, 1896-97.*

W&T AVERY (London)

1841 William & Thomas, Avery, scalemakers, 32 Hatton Garden, London, Reference: *Post Office London Directory, 1841 [Part 1: Street, Commercial, & Trades Directories]*, p.120, p.299.

1882 William & Thomas Avery, Scale and Weight Makers, 120 Queen Victoria St, London, Reference: *Post Office London Directory, 1882*, p.713.p.1833.

Another W&T. Avery advertisement, this time from *Pigot and Co.'s National Commercial Directory for 1835* is included below. There is no sovereign balance visible in the drawing of their show room.

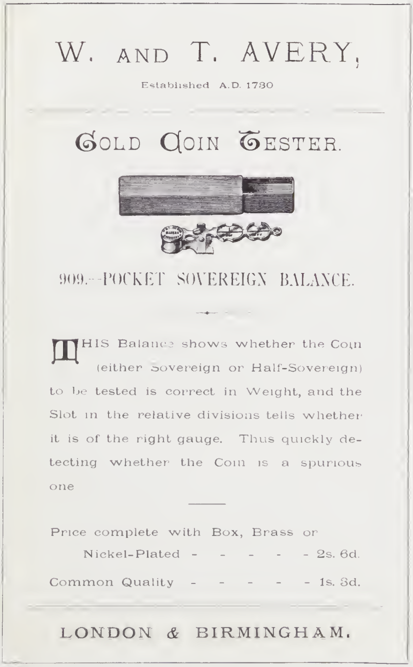


W&T. AVERY.
(LATE T. BEACH.)
THE ORIGINAL MANUFACTURERS
— OF —
Scale Beams, Steelyards, Scales, Weighing Machines.
Screw Plates & Die Stocks of every description
Nº 12, DIGBETH, AND 5, 6 & 26, MOAT LANE.
BIRMINGHAM.
MONEY SCALES OF EVERY DESCRIPTION, COMPLETE SETS OF STANDARD
SCALES & IMPERIAL WEIGHTS, FOR HOME USE AND EXPORTATION

W&T. AVERY Advertisement, Pigot's 1835.

Advertisement reads: "W & T. AVERY. / (LATE T. BEACH) / THE ORGINAL MANUFACTURERS / - OF - / Scale beams, Steelyards, Scales, Weighing Machines, / Screw Plates & Die Stocks of every description / No. 12. DIGBETH, AND 5, 6 & 26, MOAT LANE. / BIRMINGHAM. / MONEY SCALES OF EVERY DESCRIPTION, COMPLETE SETS OF STANDARD SCALES & IMPERIAL WEIGHTS, FOR HOME USE AND EXPORTATION."

It appears that W&T. Avery started selling their "POCKET SOVEREIGN BALANCE" some time after 1882, as the following Supplemental Information Sheet appears in the Avery catalogue of July 1882 between pages 87 and 88. The supplement would have been added after 1882 and before the next catalogue publication in 1885. The Type 2 maker mark Avery rocker and box as seen on the sheet, is identified as the "909. - POCKET SOVEREIGN BALANCE". This pocket sovereign balance was on offer to the public in three Styles: Brass or Nickel-Plated at 2s.6d., and Common Quality at 1s.3d., for "quickly detecting whether the Coin is a spurious one."



W. AND T. AVERY,

Established A.D. 1730

GOLD COIN TESTER.

909.--POCKET SOVEREIGN BALANCE.

THIS Balance shows whether the Coin (either Sovereign or Half-Sovereign) to be tested is correct in Weight, and the Slot in the relative divisions tells whether it is of the right gauge. Thus quickly detecting whether the Coin is a spurious one

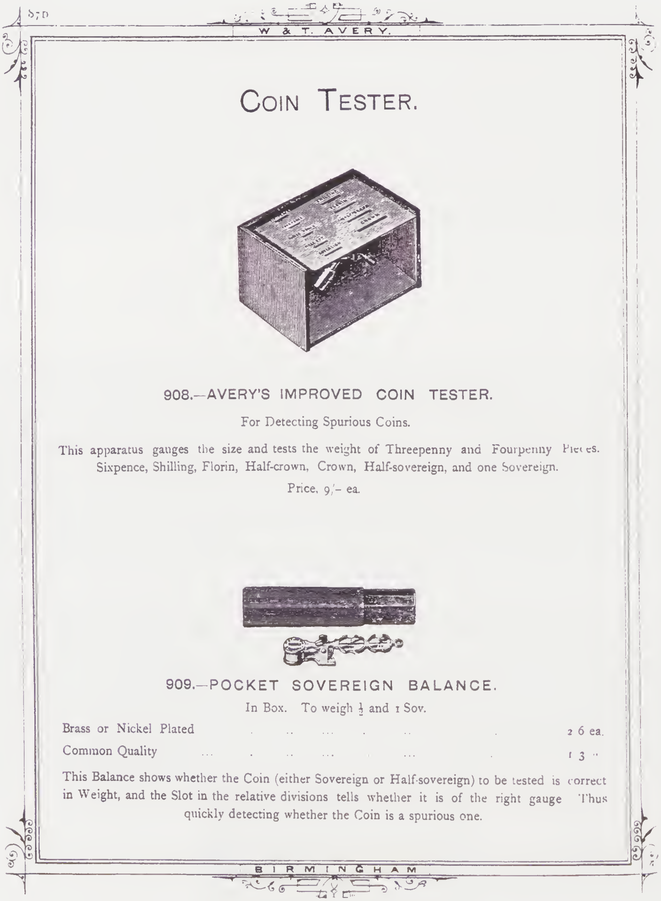
Price complete with Box, Brass or
Nickel-Plated - - - - - - 2s. 6d.
Common Quality - - - - - - 1s. 3d.

LONDON & BIRMINGHAM.

Supplemental Information Sheet in W&T. AVERY Catalogue, 1882 found between p.87 and 88.

The Avery "Common Quality" 909 appears to be the basic matte (dull) finished nickel-alloy rocker. The basic rocker was then brass or nickel-plated to give a shiny (glossy) finish at a higher price. The author believes the brass or nickel-plating was a marketing statement to further distinguish the Avery product.

The Type 1 maker mark common quality Avery rocker may have been a test lot or an off-catalogue item as there is no record of a sovereign balance product in W&T. Avery catalogues prior to 1882. Off-catalogue could be for a number of reasons, including patent, business or trademark concerns or only having the right to produce them at the time on an ad-hoc basis. By July 1885, in the Coin Tester section of the Avery Catalogue on page 87D, the "909. - POCKET SOVEREIGN BALANCE" is a standard item. At the time Avery was publishing their Catalogue every 3 years. The 909 rocker is found in Avery catalogues up to 1898 and was on offer until 1936.



87D

W & T. AVERY.

COIN TESTER.

908.—AVERY'S IMPROVED COIN TESTER.

For Detecting Spurious Coins.

This apparatus gauges the size and tests the weight of Threepenny and Fourpenny Pieces. Sixpence, Shilling, Florin, Half-crown, Crown, Half-sovereign, and one Sovereign.

Price, 9/- ea.

909.—POCKET SOVEREIGN BALANCE.

In Box. To weigh ½ and 1 Sov.

Brass or Nickel Plated	2 6 ea.
Common Quality	1 3 "

This Balance shows whether the Coin (either Sovereign or Half-sovereign) to be tested is correct in Weight, and the Slot in the relative divisions tells whether it is of the right gauge. Thus quickly detecting whether the Coin is a spurious one.

BIRMINGHAM

W&T. AVERY Catalogue, 1885, p.87D.

Ph. J. Maul's Counterfeit Coin Detectors

Philipp Jakob Maul was born in 1841 in Jugenheim, in the District of Bingen in the Grand Duchy of Hessen. He learned the trade of a precision-instrument maker in Kaiserslautern, before becoming a journeyman in Paris. He worked in England for an unknown period and finally went to Hamburg where he registered at the Registration Office on 26th July 1872. Two years later he listed his profession as "mechanician", the English equivalient of a manufacturing engineer or instrument maker.[4]

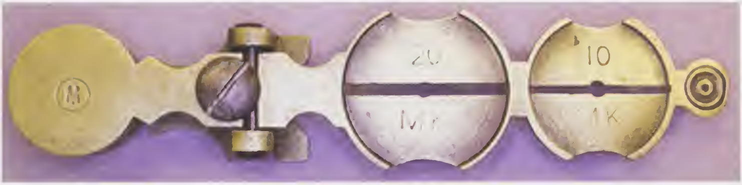
The firm of Ph. J. Maul prospered for over a hundred years, mainly because of letter balances, paper scales and office items. In 1936 the name changed to "Friedrich Maul" at Blumenau 35 and in 1989, the company was abandoned.

In the early days Maul made CCDs or Counterfeit Coin Detectors, he called 'Sicherheitswaage' meaning safety or security scales, for the testing of the new German Reichsgold 20 and 10 Mark coins which were introduced around 1874. These CCDs are remarkably similar to the Gold Coin Tester Pocket Sovereign Balances of W&T. Avery.

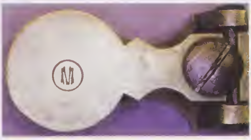
The original Ph. J. Maul CCD was introduced some time after 1874 with the "20 MARK'" and "10 MARK" designations on the platters, and a small M enclosed in a circle trademark on the poise.

In Germany the Trademark Protection Law, "Gesetz der Markenschutz" was enacted on November 30, 1874 and put into place a non-substantive trademark registration and examination system. A later statute, "Gesetz zum Schutz der Warenbezeichungen" of May 12, 1894, added an examination-based system.

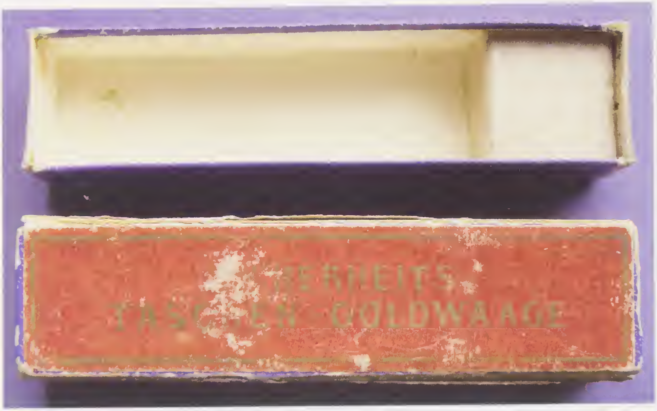
Sometime between 1874 and 1877, Maul changed the "MARK" designation on the platters to the abbreviation "MK".



Ph.J. Maul CCD c.1875 with abbreviated "MK" on platters.



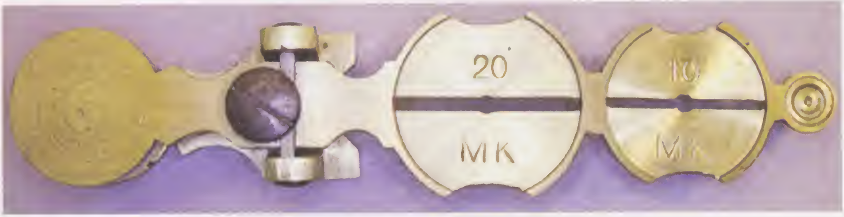
Ph.J. Maul c.1875 Trademark.



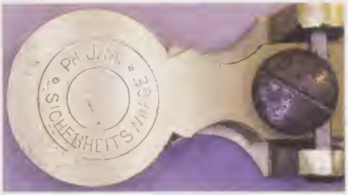
Ph.J. Maul CCD Box.
Box label reads: "SICHERHEITS - TASCHEN - GOLDWAAGE."

Note that the box interior has a shelf on which the rocker beam rests similar to the Avery boxes. This box is identical in size to the Avery boxes shown previously.

About 1877 Maul introduced a new trademark: "PH. J. M. Sicherheitswaage".

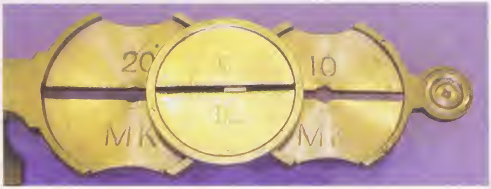


Ph. J. Maul CCD c.1877 with New Trademark.



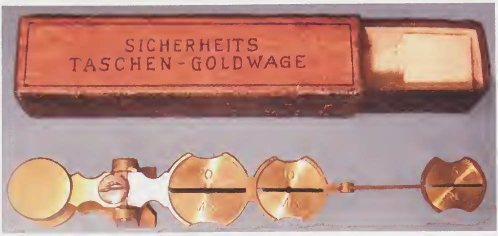
Ph. J. Maul c.1877 Trademark
Trademark reads:
'PH.J.M. * SICHERHEITSWAAGE *'

With the introduction of the 5 Mark gold coin in 1877, Maul provided an additional platter of 19.5 mm diameter for use in the 10 MK platters that would take a 5 Mark coin for testing:



5 Mark platter insert.

Maul also made another variation. He modified the CCD to support the testing of the 5 Mark coin by adding a folding extension platter and additional weight on the top of the poise to balance the extension platter:



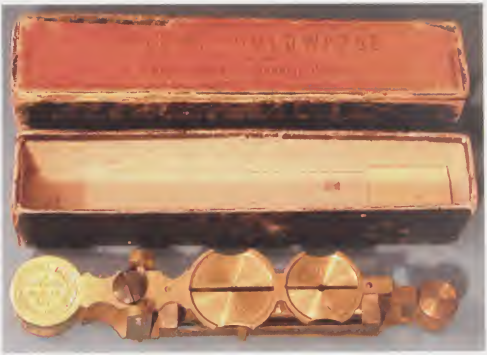
Ph. J. Maul CCD after 1877 with 5 Mark folding extension platter
Box label reads: "SICHERHEITS TASCHEN - GOLDWAGE."

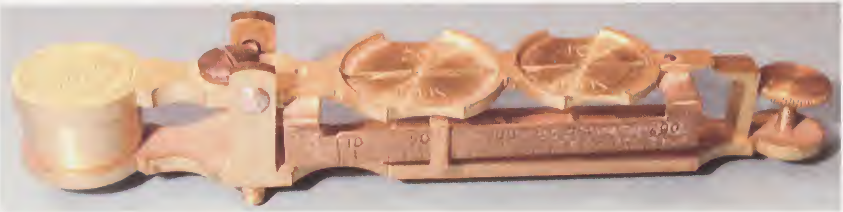
Ph.J.Maul CCD after 1877 with 5 Mark extension side view and folded in box below

On the 2 November 1877, Maul applied to the Imperial Patent Office with his next variation, his improved design "Taschengoldwaage mit Wasserwaage und Scala", a Pocket gold scale with Spirit-level and Graduated bar`:

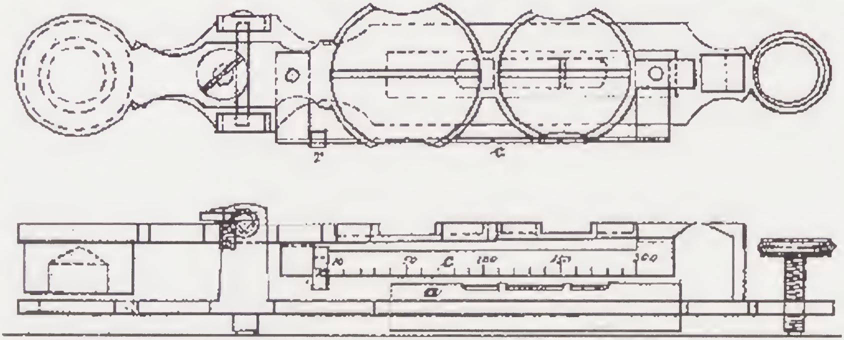
Ph. J. Maul CCD c.1878 – "Taschengoldwaage mit Wasserwaage und Scala"

Box label reads: "PATENT- GOLDWAAGE / mit genauer / Angabe des fehlenden Werthes" meaning "Patent Gold scale with accurate indication of the missing value."





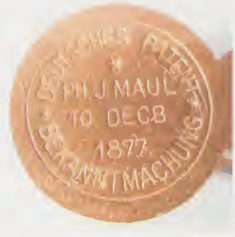
Ph. J. Maul CCD c.1878 side view of spirit level and graduation in Pfennigs.



Drawing of 'Taschengoldwaage mit Wasserwaage und Scala' from Maul Patent No. 2088.

Maul received provisional protection on the 10th December 1877 and full protection on 16th July 1878. The provisional date of 10th December 1877 is found stamped on the poise of the single production batch that appears to have been produced.

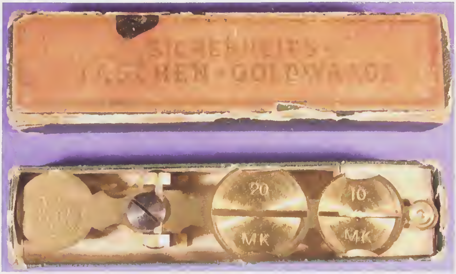
Ph. J. Maul 10 Dec 1877 Trademark.



Trademark reads: 'DEUTSCHES PATENT * PH.J.MAUL 10 DECB 1877 * BEKANNT MACHUNG' meaning "German Patent * PH.J.MAUL 10 DEC 1877 * Known Limited"

On 4th February 1879 the patent became void, by reason of non-payment of the stamp duty for the second year. There was no market for this CCD version as the Gold Mark value in circulation was guaranteed by the Government. Maul probably stopped making CCDs at the beginning of the 1880s.[4]

Maul had at least one German retailer who sold a Maul-made CCD stamped with their own registered trademark in a Maul-style box. This was Gebrüder Pichs & Co, Rathenow, of the Nitzsche & Günther (N.G.) Optical Industrial Institute in about 1876.

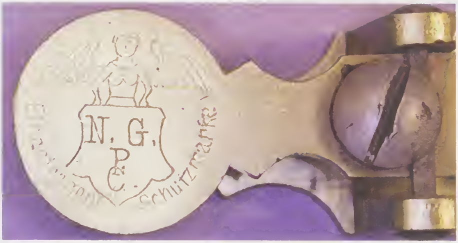


Gebrüder Pichs & Co. stamped CCD 1876.

Box label reads: "SICHERHEITS - / TASCHEN - GOLDWAAGE"

Gebrüder Pichs & Co, made a trademark application on the mark stamped on this CCD to the Royal District Court at Rathenow, registered on 9 October 1876, Nr 123/4 under Class 1 for optical instrument makers.

Gebrüder Pichs & Co. 1876 Trademark.

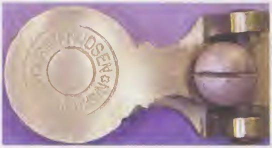


Retailer Trademark reads: 'N.G.PC. Eingetragene Schutzmarke' meaning "N.G.PC. Registered Trademark"

Maul also used retailers to sell versions of his rockers into other European markets. The author has two examples on record.

The first is a CCD sold by Cornelius Knudsen, Royal Instrument Maker in Copenhagen, Denmark (1838 – present), for the Danish 20 and 10 Gold Krone which were introduced about 1873. The CCD is stamped with their trademark on the poise:

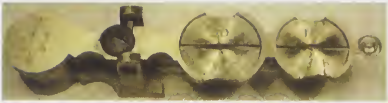
Cornelius Knudsen CCD.



Cornelius Knudsen Trademark.

Retailer Trademark reads: 'CORN.KNUDSEN * KJOBENHAVN *'

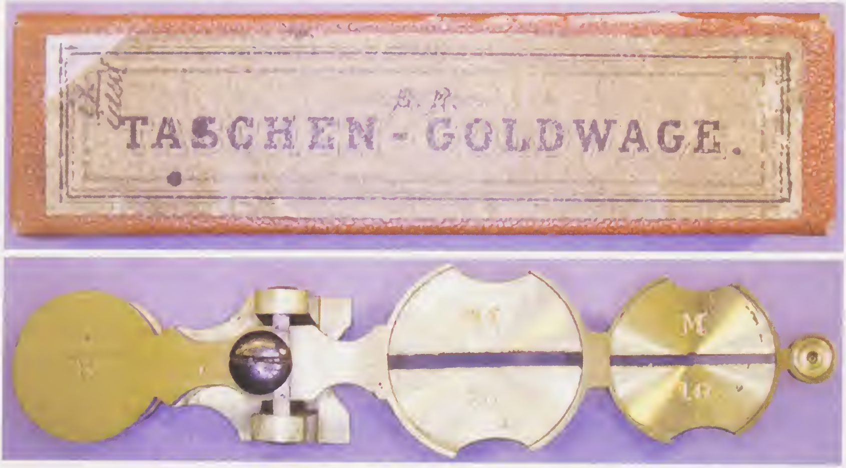
The second is a CCD attributed to Armand Weber, engineering optician, in Verviers, Belgium (1844 - 1918) selling a version for the French 20 and 10 Gold Franc which were introduced c.1860.



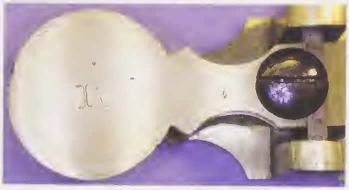
Armand Weber CCD.

The Krone and the Franc were gold coins with different weights from that of the Mark, but were sufficiently similar for it to be reasonably easy to adjust the platters and the poises to test the foreign coins.

There was at least one other German CCD maker besides Maul. This was an unknown maker with initials "E.R." from the box label, who made a CCD with a slightly narrower beam and smaller screw shown below:

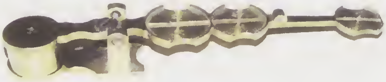


E.R. CCD. Box label reads: "E.R. / TASCHEN GOLDWAGE."

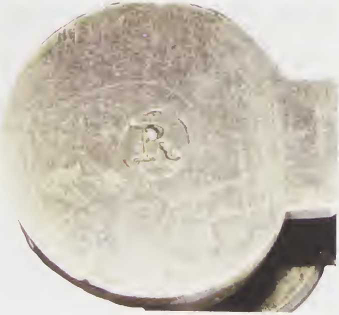


E.R. Trademark 'R'.

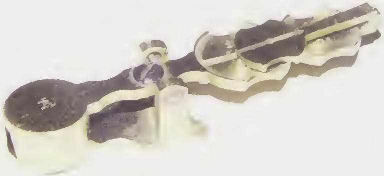
After 1877, "E.R." modified their CCD design to support the testing of the new 5 Mark by adding a folding extension platter:



E.R. CCD after 1877 with the 5 Mark folding extension platter open.

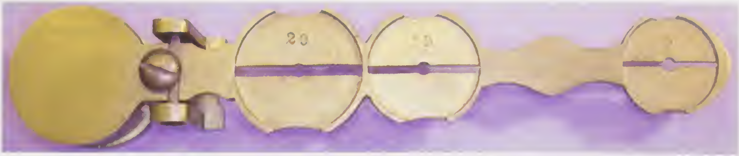


E.R. Trademark 'R' in circle.

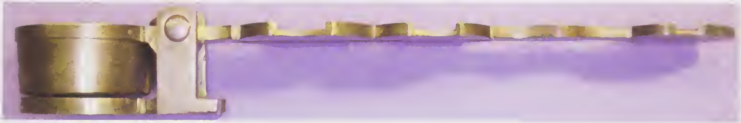


E.R. CCD after 1877 with the 5 Mark folding extension platter closed.

The author believes that 'E.R.' also supplied a CCD version which included a fixed 5 Mark platter. This belief is based on the similarity between the '2' font style stamped on the 20 mark platter of both CCDs and the use of the smaller screw:

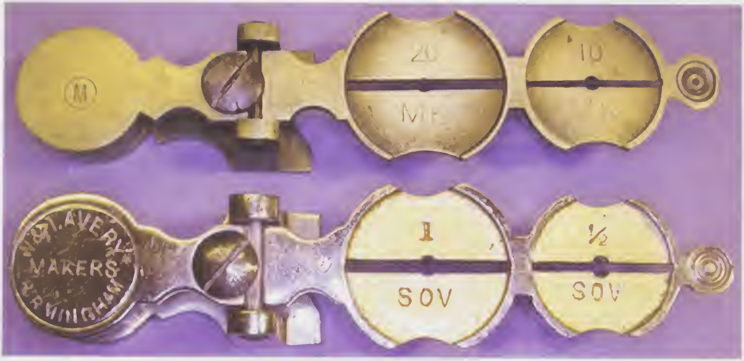


E.R. CCD after 1877 with the 5 Mark fixed platter extension.



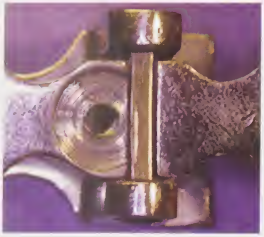
How do W&T. Avery's Gold Coin Testers relate to Ph. J. Maul's Counterfeit Coin Detectors?

A comparitive photo of a Ph. J. Maul brass Counterfeit Coin Detector c.1875 and W&T Avery nickel-plated Pocket Sovereign Balance from c.1885:

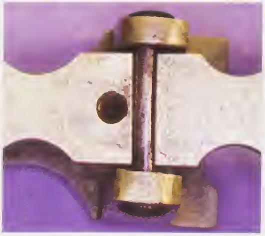


These two rockers look very similar and beg the questions: *Were they made by the same maker?* and if so *Who made them?*

At first glance the two rockers look almost identical in shape and style, including the use of the blued-screw trapping the knife and the concentric grooved style disc finial. There are minor differences in the beam and platters to account for the differences in diameter and weight between the gold sovereign and the gold mark. However, there are a number of style differences incorporated into the designs.



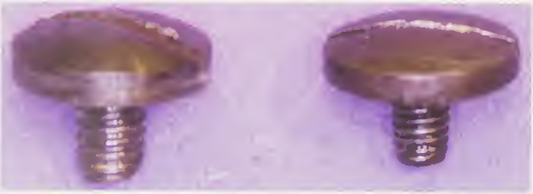
W&T Avery



Ph.J. Maul

The Avery beam has a depression the size of the screw head under the screw and over the knife which the Maul and German CCDs do not. This depression allows for improved securing of the knife with the screw.

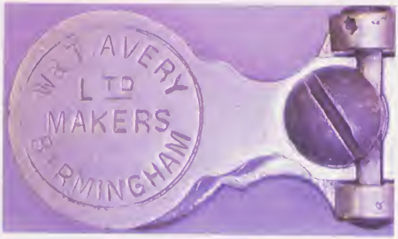
The Avery screw is a 1/8" and 40 threads/inch Whitworth Imperial used by British manufacturers. The Maul screw is a metric 2.5 mm and 20 threads/cm. screw. The screws are not interchangeable between the rockers.



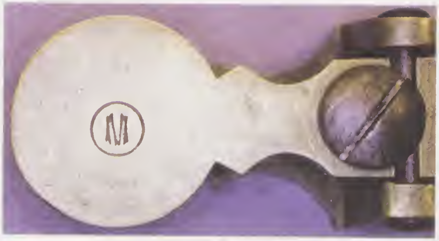
W&T. Avery

Ph.J. Maul

The Avery beam shape at the poise is different than the Maul and German CCDs although the poise is very similar.

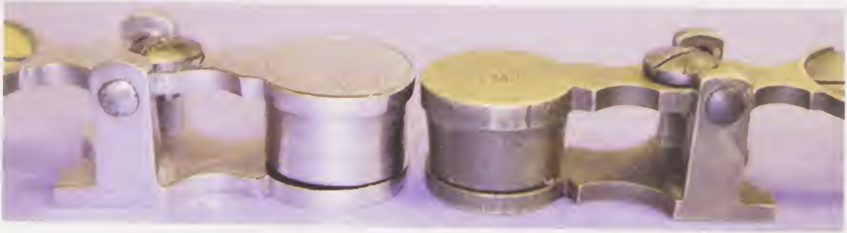


W&T. Avery



Ph.J. Maul

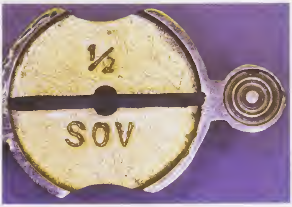
The Avery rocker has minor differences in base shape, size and column shape, height and width versus the Maul and German CCDs.



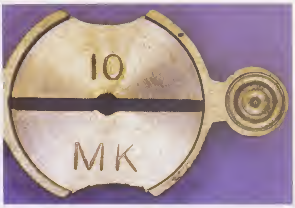
W&T. Avery

Ph.J. Maul

The Avery finial has a blank flat center whereas the Maul and German finials have an indented center.



W&T. Avery (matt-gilded platter)



Ph.J. Maul

These style differences mean that different casting moulds were used to produce the base and beam for the Avery and Maul rockers.

The most significant visible differences between Avery, Maul and German rockers are in the metal content and quality of finish, which can be observed in the photographs included in this article. The use of brass or nickel plate and matt-gilded platters is found only on the Avery rockers. All of the Maul and German made rockers are of solid brass.

Since the Avery rocker only appears about 1882, could Maul have made these rockers for Avery as some collectors believe? As stated earlier in this article, Maul probably stopped making CCDs for the German market at the beginning of the 1880s. Would Maul have changed his rocker design, manufacturing materials and finish to make sovereign rockers under contract to the British company of W&T. Avery? But if he did, why would he obtain British Imperial screws? And did he continue to provide rockers until 1936? As shown, the CCDs Maul made for his retailers are very similar to his brass CCDs.

The Avery Historical Museum has no records of Maul ever working for, contracting to, or cooperating with Avery as a designer or a supplier, but records show that Avery did cooperate with other makers and suppliers of the time like Thomas Bourne.

Perhaps Avery could only introduce the Pocket Sovereign Balance in its Catalogue after Ph. J. Maul stopped making their rockers c.1880. Avery could have kept the Type 1 maker mark rocker version off-catalogue to avoid possible issues with Maul, issues that went away by 1882 when Maul had stopped production of CCDs and let his German patent expire.

What can we conclude from all of this? The author will leave it to the reader, but will state his belief that Avery and Maul seperately manufactured their own versions of a very similar, perhaps shared, rocker design. The differences in the rocker offerings were needed to accommodate their market and business needs.

Special Acknowledgements:

Thanks to Andrew Lound, Curator, The Avery Historical Museum for his inputs and assistance.

Thanks to John Barnett and Diana Crawforth-Hitchins of the UK for allowing the use of some of their photos.

Thanks to Rolf Ohl of Germany for allowing the use of some of his CCD photos.

Thanks to Frank and Ingrid Schilde of Germany for providing photos of some of Wolfgang Schilde's CCDs.

Notes & References:

1. Smith, Barbara M.D., *The Avery Weigh*, 1967 Company History Study of W&T. Avery Limited.
2. Lound, Andrew P.B., *Life in the Balance*, to be published in 2011, Authorhouse.
3. Biggs, Norman, *Edward Whitfield and His Relations*, ISASC *Equilibrim*, 2010 Issue No.1, pp.3553-56.
4. Lindner, J., *German CCDs – Ph. J. Maul*, ISASC *Equilibrium*, pp.1614-22.
5. *Taschengoldwaage mit Wasserwaage und Scala*, Patentschrift No.2088, Philipp Jacob Maul in Hamburg, 1877.

Review

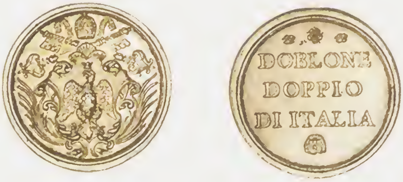
La Collezione di pesi monetali del Collegio del Cambio di Perugia by Andrea Buti & Guido Zavattoni, pub. Benucci Editore, 2009. ISBN 978-88-95937-05-2. Price 60 Euros. Available from the Collegio del Cambio, Corso Vannucci 25, 06122 Perugia, Italy, email collegiodelcambio@libero.it. 205 pages 25mm x 35mm (9.8 x 13.6 inches), weight 1.67k (3¼lb).

Having found Guido Zavattoni's book (*Bilance e Strumenti per Pesare le Monete, metà XVII - XX Secolo, di una Collezione Privata*) on scales immensely useful, I was delighted to be invited to review this collaborative effort. It has a similar glossy appearance and has colour pictures of 560 Italian coin weights, nearly all from Rome, 40 makers' marks and 29 verification marks. At the back are pictures of 12 boxes of 19th century scales, and one set of Nuremberg nesting weights made for Rome.

Buti and Zavattoni (henceforth B&Z) have kept the text concise. There is a two-page presentation by the Rettore of the Collegio del Cambio (originally the Guild of the Money Changers in Perugia) that owns the collection, eight pages by the former Director of the State Archive in Perugia concerning the function of the Cambio as guardian of the city currencies; followed by four pages of a historic document of AD 1326 regulations for weighing and verifying which I would like to understand properly. B&Z have written 16 pages on the history of coin weights in the Rome area, adding impressive footnotes to back up their argument, a subject that needed elucidation. They divide the coin weights by century, writing about half a page of introduction for each century. The bibliography is divided into books quoted, articles used, books that they used to learn about the subject, and catalogues, forming an impressive nine-page compilation.

The XV century is represented by only four weights, but the numbers increase greatly as they get nearer to the end of the 18th century. All the pictures are the same diameter, regardless of the real diameter. This means that one cannot place a weight beside the picture and be certain that they come from the same die. Also, it is disconcerting to find a weight for a half appearing to be the same size as the full weight, so it is essential to read the diameter in the text next to the picture. The reverse is only shown if it has marks on it. As so few weights have been published previously, they are not yet able to calculate the productivity of any one maker.

195) PESO PER GLI 8 SCUDI D'ORO ITALIA: D/ come sopra; R/ lupa, rosa, lupa/ DOBLONE/ DOPPIO/ DI ITALIA, marchio di fabbrica 28); taglio operato; Ø 34 mm; peso 26,42 g; epoca: 1721/1724; area di produzione: Roma



Weight for the 8 Scudi gold Italian coin; Obverse [D] as mentioned above [weight 192 has "Coat of Arms of Innocent XIII, between palm branches, surmounted by the Papal Keys and tiara"], Reverse, wolf, rose, wolf, Doblone Doppio of Italy, mark of maker 28 [see list of makers' marks] edge incised, diameter 34mm, mass 26.42grams, period 1721-1724, area of production Rome.

I do not speak Italian, so I approach such books looking for their usefulness without being able to follow the arguments in the text. I took a weight shown in a catalogue (as I do not own any early Italian coin weights) and attempted to identify it precisely. The weight has a pretty lily spray, with the words DOPPIA DI ROMA. I had to flick through until I came to the pages of lilies (the symbol of Pope Pious VI). The first three pages were ones all signed with initials, presumably of the maker. So I moved on until I found the same lettering with the requisite number and placing of unfurling flower buds, open flowers and tight buds, plus the correct width of soil. I had found B&Z no. 351. As so few weights have been published, they are not able to calculate rarity yet.

So I tried a second weight, for the ZECHINO ROMANO, a double-sided weight. The lettering has a crisp wild rose above, and the reverse has a coat of arms. I stayed in the Roman section and flicked past all the scudi and testone. When I got to the zechino weights, scattered amongst weights for other coins, I slowed down. Is it B&Z no. 227? It looks correct, but the diameter is 19mm not 23mm. Is it B&Z no. 226? Yes, I think so, as a diameter of 19mm is so similar to one of 20mm. The coat of arms is that of Pope Benedict XIII (1724-30), and only two weights are shown from his reign. I looked him up in Wikepedia and found a portrait of a very dour-looking man. He does not look like one of the jolly Popes. So what have I learned? That each pope had his own coat of arms, that some popes reigned for a very short time and that the weight-makers were extremely accurate in their stamping. The dies are consistently placed exactly in the middle of the blank, and struck with an even blow, unlike crooked, erratic and lop-sided English coin weights of the period.

My third attempt was to compare the images with those in Pommier's book written in 2000 (*Poids Monétaires, poids pour monnaies non françaises*). This latter book is also concerned with one collection only, with 147 Italian weights, from all over Italy, so not intended as a full overview of any one province. Taking Pommier no. 1229, a DOPPIA NUOVA ROMANA, I compared it with B&Z's weights of Pious VI, (1775-1799) and found that Pommier had more information, and a picture of relative dimensions (small weights look smaller than large weights, but not of correct dimensions), in slightly fuzzy black & white. B&Z have the briefest description of numbers 305 -405, described in the text at the start of that section as common weights, admittedly all very easy to see perfectly clearly, but they had Pious VI's dates incorrectly as 1775-1779.

B&Z's book deals with weights from the Papal State of Rome, with 57 weights from the Bologna region, showing clearly how few Bologna weights were made. If wanting to know about Milanese weights, it is necessary to study Mazza's book written in 1982, (I Pesi Monetari di Monete Milanesi). There were many other provinces of Italy, each with their own coins, that there are many books still to be written.

How comprehensive is the collection? I assume, as with all individual collections, that it has gaps. I would have to go to other sources to identify some weights from Rome, which is a pity, as I like B&Z's method of showing every weight clearly, with its text next to it, and being able to refer to the weight briefly as B&Z 374, just as we all refer to an English coin weight by its Withers number, laid out in their book written in 1993 *British Coin-Weights*.

But there is no point in wishing for what B&Z have not done. The book they have written is an excellent addition to metrology and will be very useful to people studying weights from Rome and Bologna, being by far the most comprehensive collection known. It is very attractive book, and not expensive for what it is. I thoroughly recommend it to collectors.

Notes:

Use http: babelfish.yahoo.com for translations. The free website is not intended for specialists or historians, but it is immensely helpful.

DIANA CRAWFORTH-HITCHINS

A Rare Mordan Postal Scale

BY MICHAEL S ROBINSON

Although this Mordan Scale has one of the most common A-frames, the method of storing the weights has not previously been recorded in EQM. A steel spigot of $^3/_{16}$" (5 mm) diameter, with a threaded top, rises from the centre of each weight hole. The four avoirdupois weights each has a hole in its centre so that it can be dropped onto the spigot, and the fifth, smallest weight of ¼ oz, is drilled and tapped so that it can be screwed onto the top of the spigot to prevent the weights from being dislodged. The stack of tola weights on the right side is similarly drilled and secured.

As the weights were drilled, they had initially to be made heavier than normal, so, *How many variations of weights did Mordan make?* As any collector will tell you, there were many diameters, many sequences, many stamps and many finishes used during the 80 years that Mordan made postal scales. (See EQM pages 3046-3055.)

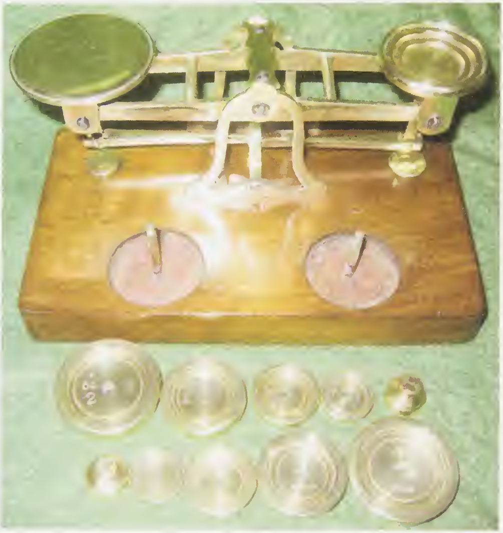


Figure 1. ▲▲ S Mordan & Co postal roberval scale, capacity 4 oz or 8 tolas.

Also, *In what circumstances would somebody require their weights to be secured?* A District Officer in India would be writing letters to his superiors and to his family. He would take his office equipment with him, carried on the backs of porters, mules or elephants. He might disregard the extra load he was imposing on his team, and buy a scale that weighed about 1½ lb (800 grams), and could be used for packets of documents rather than a little traveling Mordan shelf-edge in a leather case, weighing 1 oz (30 grams), which also weighed in tolas and ounces, suitable for single-sheet letters.

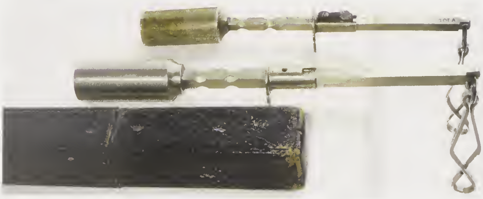
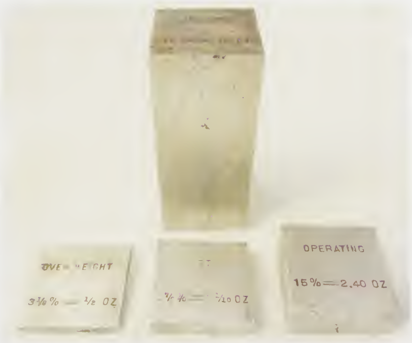


Figure 2. ▲▲ S Mordan & Co shelf-edge bismars. Front bismar capacity 4 oz or 8 tolas. Rear bismar capacity 2 oz or 4 tolas. Note that the clips have no hook on them, so a packet or parcel done up with string cannot be hung on them.

Diana Crawforth-Hitchins commented that her grandfather had this indifferent attitude to the welfare of his subordinates when he was an Indian Army Officer. He had made a brass-bound teak chest-of-drawers for his clothes that came in two parts to balance on each side of an elephant. The empty chests were heavy enough, but when in their two outer protective teak cases, they were extremely heavy. Perhaps he would have chosen lighter items if he'd had to lift them onto an elephant himself!

My Unusual Weights

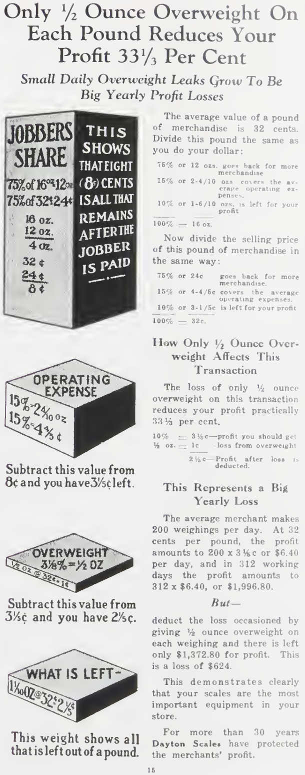
BY BILL BERNING



Last year on Ebay I found an unusual set of weights. They were housed in a nice dark brown leather case with a snap closure but they were different from other weight sets I had seen in the past. The smallest was marked Over weight 3⅛% = ½ oz, others were marked Net 6⅞% = 1⅒ oz, Operating 15% = 2.40 oz and Jobber 75% = 12 oz. They measured ⅜", 7/16", 15/16" and 3⅝" high by 1⅝" square. Each of the four weights was made of aluminum and was stamped on the side or bottom '20 S-C. I wondered what these strange weights might be for and was very puzzled as to their use.

Recently, as I was looking up a Dayton Scale in a 1922 brochure/catalog entitled *The Bigness of Little Things* by I G Kennedy, a page took me by surprise. There were my weights!

I have concluded that these weights were intended to be used as a Dayton Moneyweight Scale Co. Salesman's aid to show how the accuracy of Dayton Scales aids the merchant by preventing yearly profit loss due to incorrect weighing equipment that weighs goods too heavy.



Only ½ Ounce Overweight On Each Pound Reduces Your Profit 33⅓ Per Cent

Small Daily Overweight Leaks Grow To Be Big Yearly Profit Losses

JOBBERS SHARE
75% of 16 oz 12 oz
75% of 32¢ 24¢
16 oz.
12 oz.
4 oz.
32 ¢
24 ¢
8 ¢
THIS SHOWS THAT EIGHT (8¢) CENTS IS ALL THAT REMAINS AFTER THE JOBBER IS PAID

The average value of a pound of merchandise is 32 cents. Divide this pound the same as you do your dollar:

75% or 12 ozs. goes back for more merchandise
15% or 2-4/10 ozs covers the average operating expenses.
10% or 1-6/10 ozs. is left for your profit
100% = 16 oz.

Now divide the selling price of this pound of merchandise in the same way:

75% or 24c goes back for more merchandise.
15% or 4-4/5c covers the average operating expenses.
10% or 3-1/5c is left for your profit
100% = 32c.

Subtract this value from 8¢ and you have 3⅕¢ left.

Subtract this value from 3⅕¢ and you have 2⅕¢.

This weight shows all that is left out of a pound.

How Only ½ Ounce Overweight Affects This Transaction

The loss of only ½ ounce overweight on this transaction reduces your profit practically 33⅓ per cent.

10% = 3⅕c—profit you should get
½ oz. = 1c —loss from overweight
2⅕c—Profit after loss is deducted.

This Represents a Big Yearly Loss

The average merchant makes 200 weighings per day. At 32 cents per pound, the profit amounts to 200 x 3⅕c or $6.40 per day, and in 312 working days the profit amounts to 312 x $6.40, or $1,996.80.

But—

deduct the loss occasioned by giving ½ ounce overweight on each weighing and there is left only $1,372.80 for profit. This is a loss of $624.

This demonstrates clearly that your scales are the most important equipment in your store.

For more than 30 years **Dayton Scales** have protected the merchants' profit.

Number 122 May 2011

ISASC

INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

A Balanced View

THANK YOU PETER!

Peter Laycock is stepping down from the board after serving for nine years, three years as Secretary and the last six years as President. During this period he provided outstanding leadership and direction to ISASC. We are indebted to Peter for his years of service and what he has contributed to the society.

Peter joined ISASC in 1997 to pursue his interest in postal scales which was a natural extension of his long time interest in stamp collecting. From the beginning he was totally committed to the success of the organization. Early on he attended the annual conventions and forged strong friendships with many members. His affable and diplomatic personality, coupled with his enthusiasm for scale collecting, made him a favorite at the yearly gatherings. With his background in the corporate world and strong people skills it was no surprise that he was asked to join the board in 2003. When Tom Dooley stepped down as President in 2006, Peter was a natural choice to take over the reins and stepped up without any hesitation.

His leadership in the organization led to a smooth functioning and active group of officers. His relaxed, yet involved, management style fostered a congenial atmosphere which in turn shaped the board into a cohesive working group. He let each officer manage their particular area, while always being accessible for advice and expertise. He provided support and encouragement for officers and members to participate in the organization.

Encouragement from Peter opened the way for new ideas for promoting the society. Under his term the Special Interest Point of Contact Program was established. Initiated by Allan Rodin and strongly supported by Peter, it allows members who have specialized in a particular area of scale collecting to be available for questions and discussions with others interested in the same area. Although targeted towards new members, this program benefits everyone. Peter developed the *Scale Tutorial* found on the isasc.org website which is a useful tool, especially for recruiting new members.

One of the highlights of his tenure was the trip to England is 2008 to meet with members of our Euro sister chapter. It would have never happened without Peter taking the initiative and organizing the entire tour. The arrangements and management of the trip were excellent and reflected a tremendous amount of time and effort on his part to pull it off so efficiently. Those who were able to go learned a great deal meeting with other scalies as Peter likes to refer to our members.

Aside from his leadership aptitude, Peter also coined the word "scalie". Where he came up with it is not known, at least to others, but it is now firmly entrenched in the jargon of the organization. And for this, we salute him!

Peter's stamp on the society is commendable. He leaves ISASC in good shape and in a strong position. We will miss his leadership, but know we can call on him for assistance and advice as the society moves forward. He deserves our deep heartfelt thanks and appreciation for all his time, effort and achievements for the benefit of ISASC. So, Peter, as you transition from President to active member, we thank you and look forward to seeing you and Dian at the convention in Pittsburgh.

NEW OFFICER ON BOARD

We are pleased to announce that my unexpired Vice President term will be filled by long time member Cliff Lushbough. Many know Cliff personally as he has attended many conventions over the years. Cliff joined ISASC in 1993 and has spent that time promoting scales and the society. He regularly speaks at local schools and clubs extolling the virtues of scale collecting. In 2004 he took on a major role when he assumed the position of Assistant Editor for EQM. This past year Cliff has been involved in one of the most challenging positions in our society when he and his wife DeVee hosted the convention in Denver. I think all of us in attendance can agree that they did a great job. As a board member Cliff will deal with issues related to EQM. With his experience and dedication he will be a great asset on the board. Congratulations, Cliff!

DENVER CONVENTION ROUNDUP

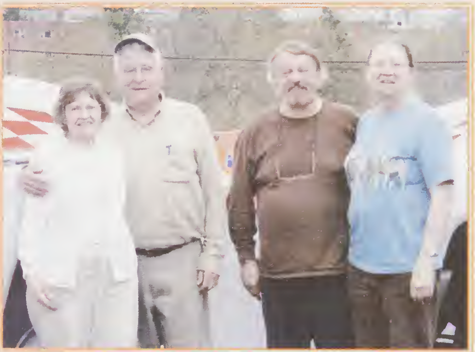
Another outstanding ISASC Convention came to a conclusion on Monday, May 24th, and we want to thank our hosts Cliff and DeVee Lushbough for making it such a great weekend. There was a kickoff meal and visit to the Forney Museum of old cars, trucks, bikes, buggies, motor cycles, train engines and more. It was off to the Adams County Museum on Friday to see part of Cliff's scale collection. Cliff is very involved in the museum and volunteers many hours towards building new displays. Spare time during the weekend allowed people to visit Cliff and DeVee's home to see more scales. The Get-Together Friday night was time to visit and share albums. The Silent Auction is always a hit, and this year over 100 scales were sold. We had an excellent turn out of folks sharing their special scales at Show and Tell. At the Saturday night banquet I read a letter from Peter Laycock who sent his regrets for not being able to attend and thanked everyone for their outstanding support during his six year term as President. The society is

sending a postal scale with some special weights as a gift to Peter to thank him for his years of exceptional service to ISASC. An inscription affirming our appreciation is engraved on the letter plate. Next year's convention will be in Pittsburgh, PA. We invite everyone to come share the fun.

COLLECTION DEVELOPMENT COMMITTEE REPORT

The Collection Development Committee headed by Mary Anne Murphy is delighted to report that the society has received several donations since the last update. Linda Loewenstein sent us several scales from the collection of her father, Bob Stein. The Aaron H. Traum family donated the balance of their collection. Chuck Lamlein contributed a box of toy scales. Ralph Lipfert donated a group of scales in memory of his parents Ralph & Gloria Lipfert. Kurt and Ann Beyreis packed and transported these scales to Pittsburgh. Bill Doniger gave us a group of scales from his collection. These were packed with the assistance of Bill James. Shipping to Pittsburgh was generously arranged and paid for (over $2000) by Bryan Negrini, our newest Pittsburgh member, who had traveled to California to purchased some special scales for his own collection. Kurt and Ann Beyreis, Les Firth and Mary Anne spent several days unpacking and processing the Lipfert and Doniger collections.

Many of you remember seeing Patrick Kelly's collection at the Kansas City Convention. Patrick donated this collection of over 1500 scales, weights and measures to ISASC. In April, Bob Jibben, James Reeve, Kurt and Ann Beyreis, Les and Elaine Firth and Don and Donna Schoenley, as well as Pat and some hired helpers, spent most of a week packing and loading the scales. Kurt and Les then drove the two 26 foot U-Haul trucks to Pittsburgh. After arriving they got the trucks unloaded, again with some hired help.



We now have over 4000 scales in the collection including duplicates. We wish to thank all the donors and volunteers who made this possible. The additional scales led us to look for an expanded display area. We were fortunate to locate a much larger space within the same facility for a lower charge per square foot. It included some heavy duty industrial shelving. This will enable us to consolidate our current display and work/storage areas into one space. Having only this one space will increase efficiency and provide room to continue to expand the collection. We expect to have everything moved, unpacked and on display for the Pittsburgh Convention in 2012. Anyone who would like to assist in any part of this process will be very welcome.

Meanwhile, we have been actively working at selling the duplicates in the collection. We have had three successful small auctions by auctioneers in the Mercer, PA, area (the one with the better scales was also on the internet) and have two auctions pending. After much exploration regarding venues to sell scales, we have learned that the best approach is to sell in groups of 25-30 scales at a time in various locations. If anyone is interested in assisting in this process by picking up a group of scales to sell via auction in their local area, please let us know.

WHAT'S NEW ON THE WEBSITE?

Website editor Carol Hayden reports that *International News* has been updated by our International Information Officer Utz Schmidt. Be sure to check it out for its wealth of informative material and great photos. Utz reports he is now in contact with and a member of the French scale group, Société Métrique de France. This latest update includes information on the French Society. To access *International News* sign into the MEMBERS section and go under NEWS on the main menu. As a reminder, when signing into the MEMBERS section, use the word member for user name and the password is steelyard.

There are several new links on the website. Under MUSEUM COLLECTIONS are the Future Museum South West Scotland and the Pfunds-Museum. Those on the Germany trip remember visiting the Pfunds-Museum. You can also access the new website of the French Scale Society under SCALE SOCIETIES. Links are listed under SERVICES on the main menu on our Home page on www.isasc.org.

FOR EGG SCALES AFICIONADOS OR NOT

Many of you have at times sought expertise on egg scales from member Charley Amsbaugh or read his articles on the subject in *EQM*. Now we are proud to announce that you can have access to some of Charley's extensive knowledge of egg scales at your fingertips. Just published is Charley's book *North American Egg Scales from ABC to Zenith*. Charley wanted to share his love of egg scales and the knowledge he has accumulated from his research since he started collecting in 2002. The book presents pictures of most US and Canadian egg graders and scales made from about 1890 to 1990. It contains information about each grader or scale, including the inventor, manufacturer, patent, vintage and original sales price. It is a great way to learn more about the scales you collect. Even if you do not collect egg scales, it is an excellent introduction to learn more about them. If you are interested in purchasing a copy, see the enclosed flyer. Great job, Charley!

PUBLICITY FOR ISASC

Some may remember that our Membership Chair Shirley Schmidt, at the urging of member Bob Foster, gave the *Farm Collector* three agriculture related scale articles from *EQM* to include in their publication over the next year. The first of these articles written by Les Firth on milk scales appeared in the November 2010 issue. The second article was published in their May 2011 issue. It is entitled *Weighing In on Eggs* written by Bob Jibben describing how early scales helped small farmers market eggs. At the end there is a short paragraph mentioning *Equilibrium* and ISASC with our website address. With a circulation of around 45,000 this is great exposure for our society.

THE CRAWFORTH INDEX

Michael and Diana Crawforth spent over 30 years devoted to the study of scales and weights and their British makers. During those years they kept detailed notes about the makers on small index cards, as there were few personal computers around when their research began. These cards, numbering about 6000, have been scanned, converted to PDF format and burned onto compact disks to preserve this extensive wealth of knowledge. Our Euro sister chapter has made this invaluable information available to us all. This compact disk may be ordered from their Publications Officer David Apps. If interested, contact David via email at ddcapps@btinternet.com or by mail at Fern Farm House, West Winch, King's Lynn, Norfolk, PE33 OPD, England. The price is £25 including postage, and there is the option to pay via PayPal. More information about the disk is available in a review by our Editor Jan Berning in EQM 2010, Issue No. 4, on pages 3652-53.

BRITISH SCALE MAKERS 1620-1920
THE CRAWFORTH INDEX

Over thirty years ago Michael and Diana Crawforth began to collect information about British scale makers. The information was written on file cards, eventually numbering about 6000. In order to safeguard this unique resource the cards have been converted to PDF files and are on this compact disc.

MEMBERSHIP DIRECTORY

Enclosed in this mailing is your 2011 Membership Directory. Membership Chair Shirley Schmidt has put a lot of effort into updating this directory with the current information you provided her. Please take a few moments to review your listing to ensure it is correct. If there are any changes, please let Shirley know at sasmidt@avci.net or by phone at 810-376-4438.

HOT OFF THE PRESS

Our Editor Jan Berning has spent the last couple of months updating and finalizing the hard copy of the *EQM Index*. We have just received it back from the printer and your copy is included in this mailing. This is the first hard copy of the index since 2004 and is inclusive of all issues of *EQM* through 2010, Issue No. 4. Remember, the index is also available online on the ISASC website in the Members section. The online index is normally updated semi-annually. It is our goal to have a hard copy of the index produced every five years.

SOMETHING EXTRA

Enclosed is a copy of the article published in *Antique West* about Christopher Steele's nationally recognized collection of coin operated scales. The folks at *Antique Week*, publisher of *Antique West*, were kind enough to send enough copies for all our members to enjoy.

REGIONAL MEETINGS REMINDER

Just a quick reminder of the upcoming regional meetings scheduled for later this summer. The Midwest Weigh-In will be held August 27th at the home of Donna and Don Schoenly in Glen Ellyn, IL. The Michigan Get-Together will be September 17th at Jim Dietrich's home in St. Charles, MI. The Mid-Atlantic Scale Group plans to meet September 24th at the home of Jerry and Mary Katz in Downingtown, PA. We encourage you to attend the regional meetings and get to know your fellow collectors. These meetings are a great way to get together, especially if you are not able to attend the annual convention. There is an open invitation to all members. See the enclosed flyer for each meeting.

IN MEMORIAM

We were deeply saddened to learn that Joe Lenorovitz passed away on April 5, 2011. Joe was an early member of ISASC and over the years was very involved and committed to the society. He served on the board as Vice President for several years. A regular convention attendee, he hosted the 1997 Los Angeles Convention where many of us were fortunate to see his wonderful scale collection. Joe was generous with sharing as he often participated in Show and Tell. We send our condolences to his wife Ruth.

WELCOME TO NEW MEMBERS

We would like to take this opportunity to welcome the following new members and encourage them to contact any of our members should they have questions.

Bernardo Fernandez & Maria Armanino	Buenos Aires, Argentina
Vernon & Pamela Renfro	Arroyo Grande, CA
Joe & Cathy Schaeffer	Hamilton, IN
Floyd & Nita Tipps	Ruidoso, NM

As incoming President, I am looking forward to this leadership role in ISASC. Following Peter's excellence will be difficult, but with the great board of directors and committed members of ISASC, we will meet the future challenges. We wish each of you success as you pursue your collection of scales and weights. Please feel free to contact me with ideas and/or concerns.

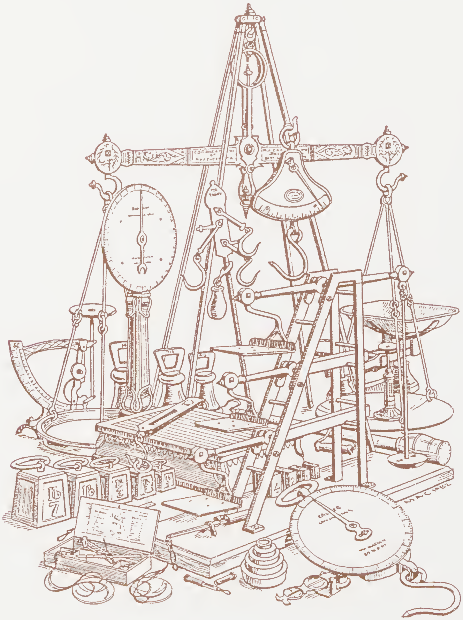
Robert Jibben
Incoming President ISASC

ISASC

EQUILIBRIUM®

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

MAY 19 - 23, 2011 CONVENTION ISSUE DENVER,CO



ISASC CONVENTION SITES

1979	San Francisco, CA
1980	London, England
1980	New York City, NY
1981	Delft, The Netherlands
1983	Sindelfingen, West Germany
1984	Chicago, IL
1986	Washington, DC
1986	Paris, France
1987	Anaheim, CA
1988	Boston, MA
1989	San Francisco, CA
1990	Philadelphia, PA
1991	Chicago, IL
1992	San Diego, CA
1993	Baltimore, MD
1994	San Francisco, CA
1995	Hershey, PA
1996	New Orleans, LA
1997	Los Angeles, CA
1998	Toronto, Canada
1999	Atlanta, GA
2000	Seattle, WA
2001	Chicago, IL
2002	Pittsburgh, PA
2003	San Antonio, TX
2004	Minneapolis, MN
2005	Washington, DC
2006	San Francisco, CA
2007	Dearborn, MI
2008	Chattanooga, TN
2009	Kansas City, MO
2010	Portland, OR

Welcome to the Thirty-Third Convention of the International Society of Antique Scale Collectors

May 19-23, 2011
Renaissance Hotel
Denver, Colorado

INTERNATIONAL SOCIETY O

PRO

THURSDAY, MAY 19, 2011

10:00 A.M. - 4:30 P.M.
CONVENTION REGISTRATION • LOBBY AREA

6:00 P.M. - 9:00 P.M
TOUR & BUFFET DINNER AT FORNEY MUSEUM OF TRANSPORTATION
Bus loads at main entrance at 5:00 P.M.

FRIDAY, MAY 20, 2011

9:00 A.M. - 12:30 P.M.
CONTINENTAL BRUNCH & TOUR ADAMS COUNYTY MUSEUM
Bus departs main entrance at 9:00 A.M

1:00 P.M. - 5:00 P.M.
CONVENTION REGISTRATION • LOBBY AREA

6:30 P.M. - Until?
COLLECTOR'S GET-TOGETHER • OFFICIAL WELCOME
ALBUM-SHARING • DISCUSSION OF WEIGHTY MATTERS
Light Meal • Telluride Room

SATURDAY, MAY 21, 2011

9:00 A.M. - 12:00 NOON *Telluride*

"THE ASSAY BALANCE, ITS EVOLUTION AND
THE HISTORIES OF THE COMPANIES THAT MADE THEM"
John Shannon

"US MINT COINAGE OPERATIONS, ITS SCALES AND WEIGHING MACHINES"
Tom Fesing and Hall Kellerman

"WILL THIS MINE PAY OFF?"
Bill Rose

RAM

12:30 P.M. - 1:30 P.M.
LUNCHEON BUFFET
Vivace! Ristorante

2:00 P.M. - 5:00 P.M.
SILENT AUCTION & LET'S MAKE A DEAL
Coordinated by Eric and Judy Soslau
Telluride

6:15 P.M. - Til...
MILE HIGH RECEPTION AND BANQUET
Aspen Room

SUNDAY, MAY 22, 2011

9:00 A.M. - 12 NOON *Telluride*

SHOW AND TELL
Special treasures from our members • Moderator Jerome Katz

BUSINESS MEETING
Officer reports, floor discussions and comments

12:30 P.M. - 1:30 P.M.
LUNCHEON BUFFET
Vivace! Ristorante

MONDAY, MAY 23, 2011

9:00 A.M. - 5:00 P.M.
TOUR TO GARDEN OF THE GODS & AIR FORCE ACADEMY
Bus departs main entrance at 8:30 A.M.
Lunch at Garden of the God's Trading Post
Bus stop at Denver International Airport
Return to Hotel

SEE YOU NEXT YEAR IN PITTSBURG, PENNSYLVANIA!

IN ATTENDANCE*

Charley and Dawn Amsbaugh, Westminster, Maryland
Steve and Kathy Barnett, Ellicott City, Maryland
Steven and Karen Beare, Wilmington, Delaware
Jan and William Berning, Sycamore, Illinois
Kurt and Ann Beyreis, Alexandria, Virginia
John and Betty Cheeseman, Dorset, England
Norman and Phyllis Cima, Menlo Park, California
Jim Dietrich and Joyce Glazier, St Charles & Saganaw, Michigan
James and Kathie Earle, Lullymore, Ireland
Mary Easton, Downers Grove, Illinois
Bernardo Fernandez and Maria Armanino, Buenos Aires, Argentina
Leslie and Elaine Firth, Mercer, Pennsylvania
Carol and Bob Hayden, Austin, Texas
Gregory and Judy Hill, Mira Loma, California
Arline and Bill Jacobson, Bayside, New York
William and Nancy James, Orinda, Califonia
Robert and Mary Jibben, Minneapolis, Minnesota
Jerome and Mary Katz, Rockville, Maryland
Edward Konowitz and Andrea Rosenfield, Cheshire, Connecticut
Ross and Winsome Leadbetter, Chapel Hill, North Carolina
Linda and Mark Lowenstein, Boulder, Colorado
Clifford and DeVee Lushbough, Aurora, Colorado
Ross Lushbough, Huntsville, Alabama
Clem and Katharine Monday, Oroville, California
Greg Moss, Waterford, Michigan
Mary Anne Murphy, Pittsburgh, Pennsylvania

*

* *Names of members attending their first convention are in italics*

IN ATTENDANCE*

Bryan Negrini, Pittsburgh, Pennsylvania
Catherine Panagakos, Greenville, South Carolina
Lawrence Press, Jacksonville, Florida
James Reeve, Iowa City, Iowa
Vernon and Pamela Renfro, Arroyo Grande, California
Don Rogers, Bennett, Colorado
Les Schneiderman, Omaha, Nebraska
Don and Donna Schoenly, Glen Ellyn, Illinois
Don Shaw and Donna Meeks, Cedar Rapids, Iowa
Shirley Silva, Danville, California
Ben and Mary Smith, Jackson, Michigan
Eric and Judy Soslau, Austin, Texas
Lorraine Texeira and Mary Krause, Pleasanton, California
Jaap Visser, Haarlem, The Netherlands
Phil Wehman, Chattanooga, Tennessee
Ruth Willard and Gayle Higaki, San Mateo and Oakland, California
Charles Yarton, Lake Oswego, Oregon
Jack Young, Beaumont, California

CONVENTION NOTES

1. Bidder numbers for the Silent Auction are on the back of the name tag. Please wear tag to all events. If a seller needs additional bid sheets, contact Judy Soslau.
2. Be sure to bring your MEAL TICKET to each applicable meal.
3. Attire: Casual for days and evenings. Dress-up suggested for Saturday night banquet.

CONVENTION COMMITTEE

Cliff & DeVee Lushbough - Chairpersons
Jan Berning, Carol Hayden, Bill James, Bob Jibben,
Ross Lushbough, Don Schoenly, Eric & Judy Soslau

ISASC

INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

Founded September, 1976

3616 Noakes St. • Los Angeles, CA 90023 • USA

Officers 2011

President	Peter Laycock
Vice Presidents	Bill James
	Robert Jibben
	Jerome Katz
	Mary Anne Murphy
	Shirley Schmidt
Secretary	Carol Hayden
Treasurer	Kurt Beyreis

Executive Secretary......................Jan Macho

YOU are INVITED

to the

Mid-Atlantic Scale SUMMIT

WHEN?

September 24, 2011 11:00 AM Until?

WHERE?

The home of JERRY & MARY KATZ
4305 Wheelwright Trail
Downingtown, PA 19335

Plan on coming about 11 AM and staying until the party is over at?

Lunch will be served so please bring a dish to share. Meat and drinks will be provided. Call for details.

View the Katz scale collection. Bring your album or some scales to show.

Please RSVP to Jerry or Mary at (610) 269-7938 or by Email at jeromekatz@aol.com.

(OVER)

Please call (610) 269-7938 for detailed driving instructions.

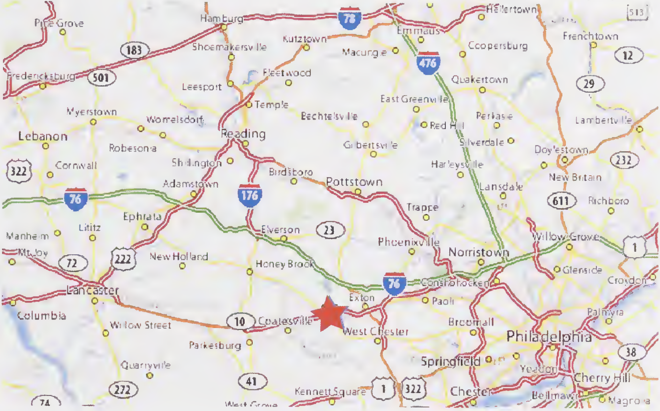
Downingtown is not far from I-95 or the PA Turnpike.

There is a Downingtown exit on the PA Turnpike.

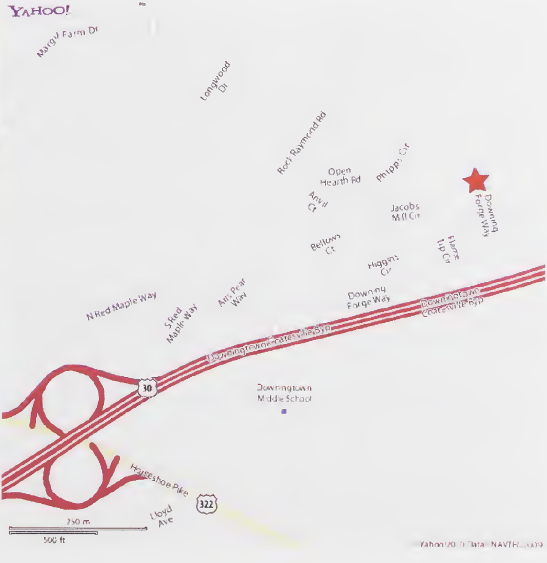
SEPTA and Amtrak train stations are located in Dowingtown.

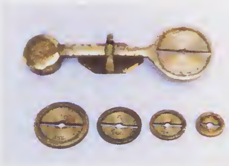
Renninger's Antique and Collectible Extravaganza is held in Kutztown Thursday & Friday Sept. 22-23.

AREA MAP



DOWNINGTOWN, PA MAP





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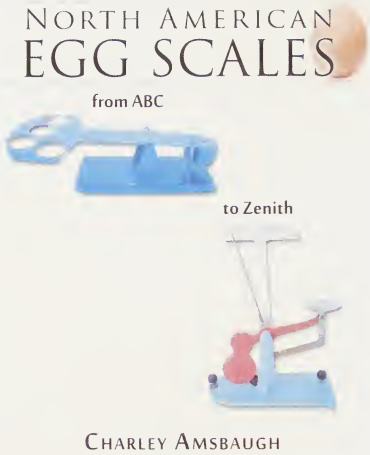

NORTH AMERICAN
EGG SCALES
from ABC
to Zenith
CHARLEY AMSBAUGH

What is the difference between an egg grader and an egg scale?

How can you identify US and Canadian egg scales with no makers' markings or labels?

Where can you find information on egg scale inventors, manufacturers, patents, etc?

You can find the answers to these and other questions about US and Canadian egg graders and egg scales in Charley Amsbaugh's long-awaited book,

North American Egg Scales from ABC to Zenith.

To order your copy at the ISASC member price of $29.00 to be delivered via flat rate Priority Mail, please send your check or money order in the amount of $34.00 to Charley Amsbaugh, 4004 Bee Court, Westminster, MD 21157. Please print your name and mailing address.

- -

Charley Amsbaugh
4004 Bee Court
Westminster, MD 21157

NAME: ____

ADDRESS: ____

CITY ____________________ STATE ______ ZIP __________________

NUMBER of COPIES __________ AMOUNT ENCLOSED $__________________

MIDWEST SCALE COLLECTORS

You Are Invited to the 6th Annual Weigh-In

Saturday, August 27, 2011
11:00 AM Until?
At
Don & Donna Schoenly's Home
260 Montclair Avenue
Glen Ellyn, IL 60137

Plan on coming about 11AM and staying until the party is over at?

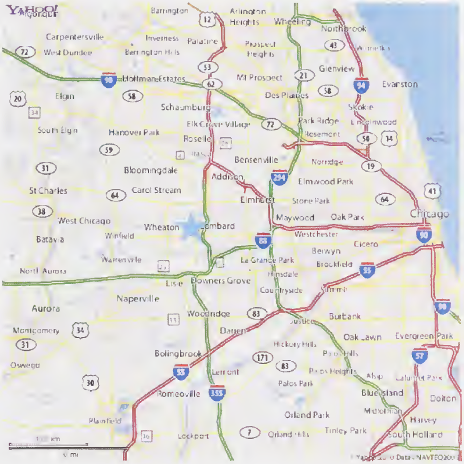
Lunch will be served so please bring a dish to share & BYOB.

View antique collections. Bring your album and some scales to show or sell.

Please RSVP to Don or Donna at (630) 858-7595 or by Email to donschoenly@yahoo.com

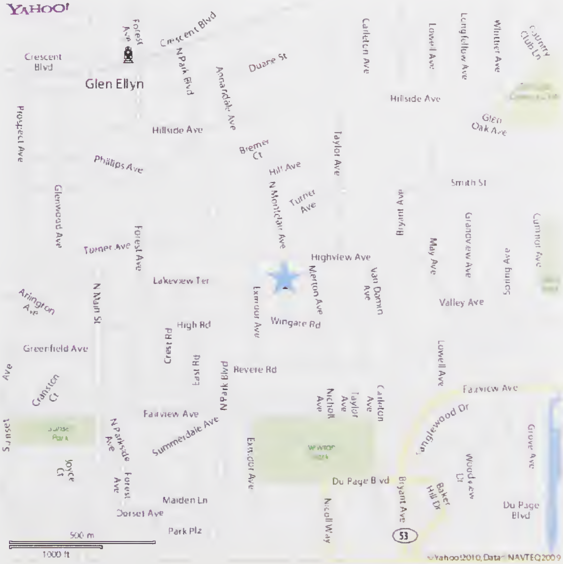
over

AREA MAP



If other directions are needed please call (630) 858-7595.

GLEN ELLYN MAP



OVER

14TH ANNUAL

MICHIGAN SCALE COLLECTORS MEETING

(ALL ARE WELCOME)

Saturday, September 17th
@
JIM DIETRICH'S
10985 WAHL ROAD
ST. CHARLES, MI 48655

PLEASE JOIN US FOR A DAY OF VIEWING, TALKING ABOUT AND POSSIBLY TRADING OR SELLING SCALES - ALL OF WHICH HAS HAPPENED AT PREVIOUS MEETINGS. IT WILL TRULY BE A DAY OF INTEREST AND LEARNING FOR SCALE COLLECTORS.

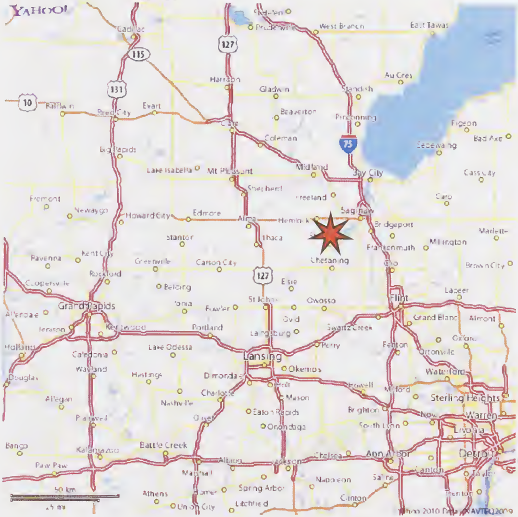
THE MICHIGAN COLLECTORS WILL FURNISH A LUNCHEON WHICH WILL FEATURE BARBEQUED CHICKEN, SO COME EARLY, STAY AS LATE AS YOU CARE TO AND ENJOY THE COMPANY OF YOUR FELLOW COLLECTORS.

SEE ONE OF THE WORLD'S LARGEST SCALE COLLECTIONS!

PLEASE RSVP TO JIM at weighrichd@msn.com , phone (989)865-6549 or write to the above address.

SEE YOU ON SEPTEMBER 17TH?

AREA MAP



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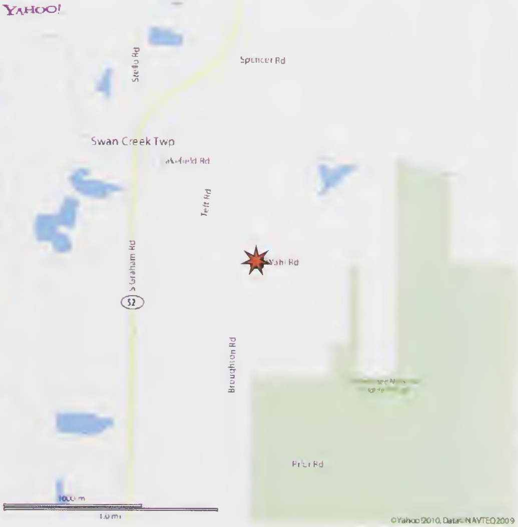
ST. CHARLES MAP

Barns full of scales!



ISASC

EQUILIBRIUM®

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

2011 ISSUE NO. 3 PAGES 3713 - 3740

Cover Picture

A vast assortment of weights from many locations worldwide and spanning multiple eras appears on the cover of this issue. Other weights may be explored and learned about inside the pages. Weights from the Balearics, Mallorca, England and China may be seen. In addition postal scales from Germany and America may be found in this issue.

Carol Hayden Collection

We continue to receive articles from authors who live in numerous countries; Belgium, England, Germany, Spain and the USA. Any length article can be used. Please keep the articles coming; *Equilibrium* is your journal.

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Measures and Weights from the Balearics

BY FRANCISCO VALLES LLABRES & DR. LUDWIG RAMACHER

Unknown metrology of some very well known islands.

Mallorca and the Balearics[1] are famous for the variety of possibilities for tourists, not only as places for mass tourism, but also more hidden treasures where not many foreign people come.

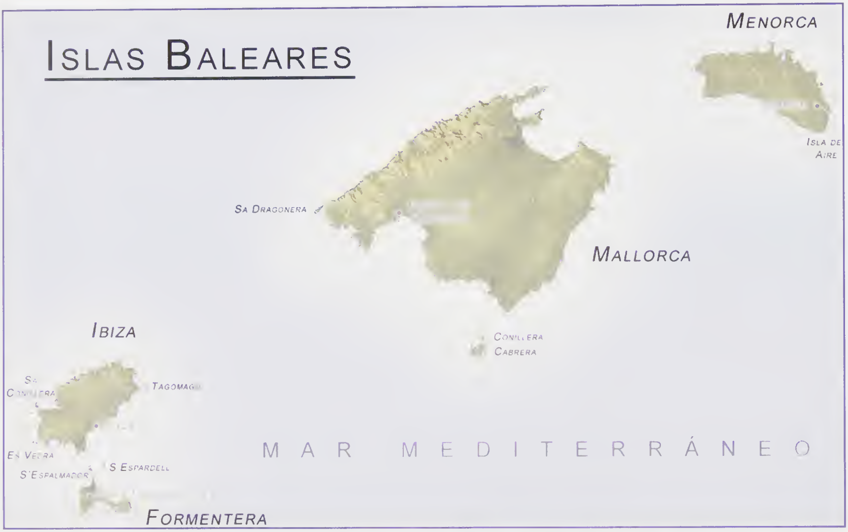


Figure 1. http://commons.wikimedia.org/wiki/File:Baleares-rotulado.png

Figure 2 & 3. Two unusual views of Mallorca; snow near the house and a bay without tourists.

Less well known to many visitors is the turbulent history of the Balearics; in the early days Phoenician, later Roman, then under Vandal rule, then a Franconian protectorate and for some centuries Arabic. After the "reconquista" united the Spanish crowns of Aragon and Catalonia, in the 1st half of the 13th century, the Balearic became part of it in three steps, being an independent kingdom until 1349. When the Spanish crowns of Catalonia and Aragon were joined to Castile in the 15th century, the Balearics became part of the Spanish kingdom. Changes did not finish then, as for about 90 years one island, Menorca, became English (1708-1802), while not forgetting Napoleon's depredations in the Mediterranean.

With such a mixture of cultures influencing the Balearics, the pre-metric systems of weighing and measuring are delightfully eccentric.

The typical cambists for traders of the 18th and 19th centuries provide lists from the Balearics, mainly for Palma and Mahon and rarely Ibiza, with their different sets of measures and weights. The most important ones are listed here as examples[2].

Table 1: Premetric measures on the Baleares

UNIT OF	MALLORCA (PALMA)	MENORCA (MAHON)	IBIZA
Length	Cana (1.56 m)	Cana (1,60 m)	As Mallorca
Square	Quarterada	As Castillia	As Mallorca
Dry Matter	Quartera (70,341)	Quartera (75,991)	Quartera (77,981)
Salt	Medino (932,481)	Medino	As Mallorca
Wine	Quartin (20,281)	Gerra (12,061)	As Mallorca
Oil	Misura (16,221)	Gerra	As Mallorca
Weight	Lliura/Libra/terca/Rotolo[3] (407 g)	Libra (400g)	As Mallorca

A separate article about this would be necessary to show all the distinct types especially of volume measures for different types of liquids and dry goods. Some literature exists in local publications[4]. The construction of the measures for dry matter is distinctive on Mallorca, and other Spanish regions have different construction. Figure 4 shows some examples of the collection of Antoni Valles, Francisco's father.

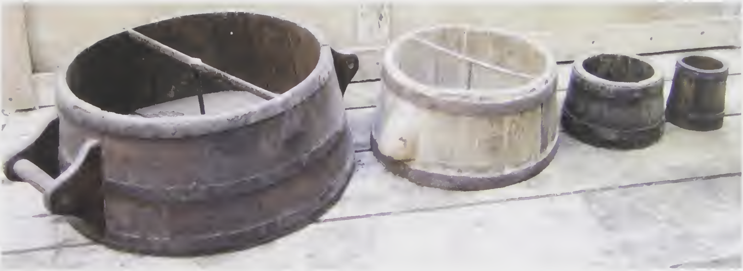


Figure 4. Measures for grains.

Spanish pre-metric metrology is complex. Different kingdoms and important cities had their own legal units for length, area, volume and weight[5]. Beside the Castillian libra (461g libra of 16 onza), there have been many others. Catalonia had a different libra (400g libra of 12 onza) and within that kingdom the Balearics were again different (407g libra of 12 onza[6]).

Table 2: The premetric system for weights used on Mallorca

MALLORQUIN NAME	ENGLISH NAME	VALUE	MASS
Cargo		312 lliura	127 kg
Quintall/cantaro Mallorcin		104 lliura	42,33 kg
Quintall/cantaro Berberisco		100 lliura	40,7 kg
Arrova Mallorcin		26 lliura	10,58 kg
Arrova Berberisco		25 lliura	10,18 kg
Lliura Carniceira	pound for meat	36 unca	1221 gr
Lliura/Rotolo	pound	12 unca	407 gr
Lliura prima d'apotecaria	apothecary pound		345 gr
Unca	ounce	16 argenc/adarme	33,9 gr
Cuarto		4 argenc/adarme	8,48 gr
Argenc/Adarme		36 gra	2,12 gr
Gra	grain		0,059 gr

The change from the old units to the metric system has a prolonged history in Spain with first attempts in the first half of the 19th century and the final acceptance in 1871/72.

From the pre-metrical time generally three types of weights are reported for the Balearics.

→ weights made from cast iron
→ octagonal weights made from bronze (brass)
→ round weights made from bronze (some with a handle) from Menorca

Often cast iron weights are nowadays called "fish-weights". They were used with a specific balance with two different hooks on the beam, in the markets, including of course the fish-markets, but not only there. Figure 5 shows this type of scale, and figure 6 a collection of weights.

Their shapes and decoration change from region to region in Spain and they exist in numerous weight systems. On Mallorca they were obviously based on the local one, as they were not intended for trade with the continent.

If we look to the mass found with the weights today, they either seem to have not been too precise, or the differences found are caused by corrosion. On the other hand they have been verified, as can be seen on the weight on the left of figure 6.

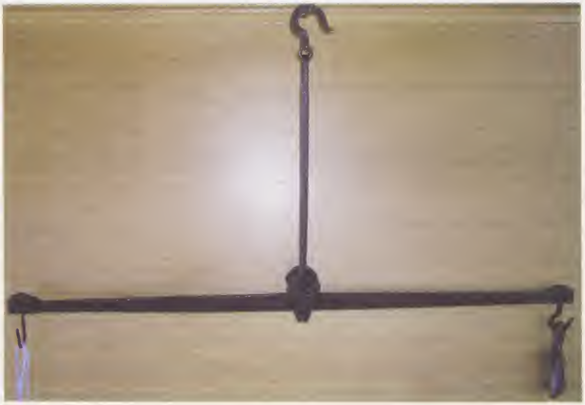
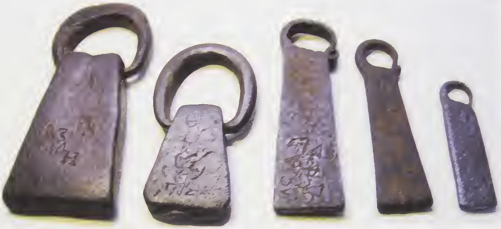


Figure 5. ➶➶ Typical scale used in markets (see two different hooks).

Figure 6. Some "fish-weights" from Mallorca showing the two principal shapes.



Pre-metric flat octagonal weights seem to exist in the western part of the Mediterranean at several places[7]. It is not clear when they were used on Mallorca. Literature about the contents of pharmacies shows their use as apothecary weights during the 18th century, in that case for the weights of 2 and 1 onza[8]. Verification marks also indicate their use as trade weights, probably also in the 18th century. One decree legally required these weights for trade purposes from 1.1.1824[9], so that gives a starting point for research.

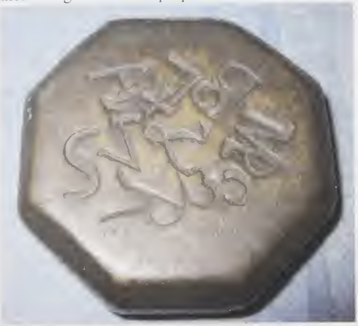


Figure 7. 4 onza weight probably in use before 1830.

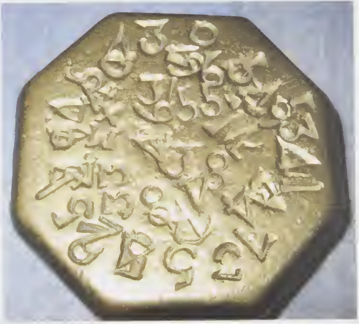


Figure 8. 12 onza weight in use for at least 40 years.

A full set of such weights is almost impossible to find nowadays. The biggest in use was that of three lliura (=lliura carnieeira), the smallest we know was for 2 adarmes[10]. Circles are used to show the value in the different units.

These weights exist for both the Mallorcan weight standard and for the Castillian one. Far more are according to the standard of Mallorca in the collections we know.

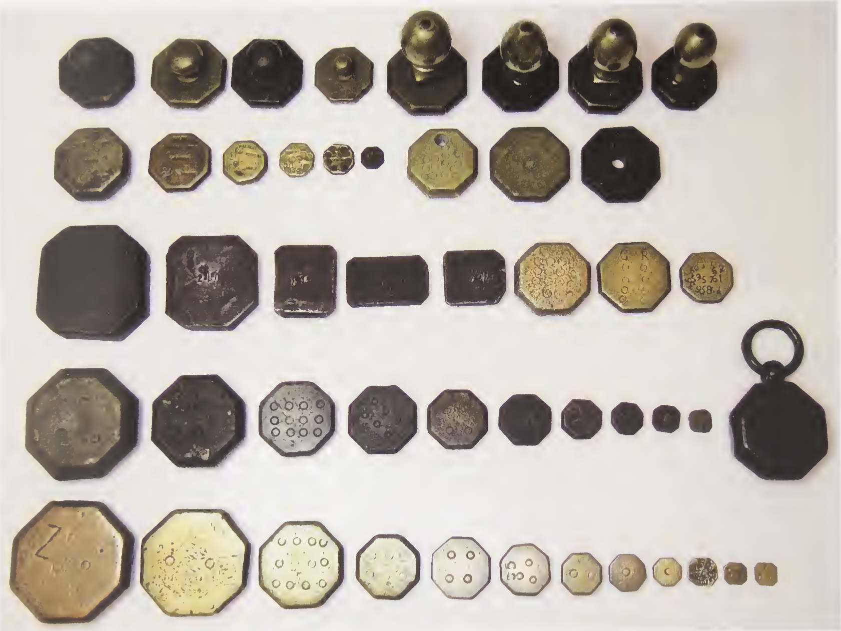


Figure 9. /./ Collection of octagonal types; bottom row from 3 lbs to 2 adarme. Courtesy Juan Alemany.

Probably due to a lack of new metric weights, and the high cost of weights made of brass, several examples of weights are known where, for example, by addition of a knob, the weight was corrected to the metric system. To reach 100 gr and 200 gr was rather easy as 3 onzia was 102 gr and 6 onzia was 204 gr. To adjust 500 gr was possible only by adding a knob to a 12 onzia weight. The biggest known is 1000 g, possibly even an early metric one, the oldest verification mark being from 1852.

This adjustment to metrification seems to have been done around 1870/1872 when Spain finally changed to the metric system. In a Royal decree of 28.03.1876 councils were finally obliged to have metric weights for verification purposes, either of brass or iron, and in another decree dated 08.07.1892 the form of such weights were prescribed as either round or hexagonal, of cast iron with a hollow for lead filling or knobbed brass weights. Later in that period octagonal weights were phased out.

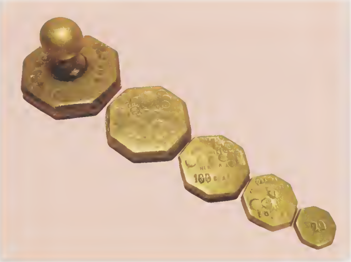
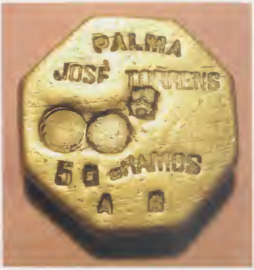


Figure 10. ◄◄ A set of metrified metric weights.

Figure 11. ►► Details of a 50 gr weight.

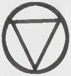
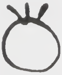
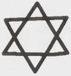
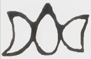


It can be assumed that most of the marks being letters or similar are from the time before 1830, possibly also representing certain years, but we have no written proof for that. Both type of marks have been found on at least one measure for dry matter too. On that measure we found the largest number of marks which are not numbers.

By law an annual verification was required after 1830. We have examples of octagonal weights with numerous overlapping verification marks in the form of two numbers.

Table 3 gives an overview of the marks found so far[11]. The system is specific to the Balearics, as in Castille and in Catalonia different ways of verification were used.

TABLE 3: MARKS USED BEFORE 1830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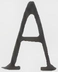	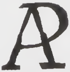	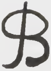	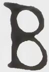	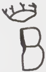	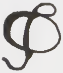	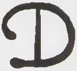	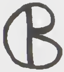
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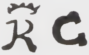	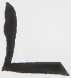	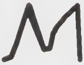	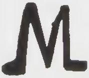	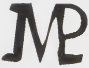	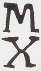	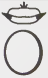	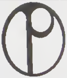
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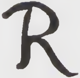	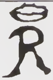	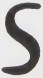	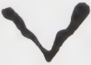	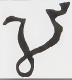	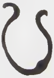	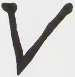	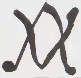
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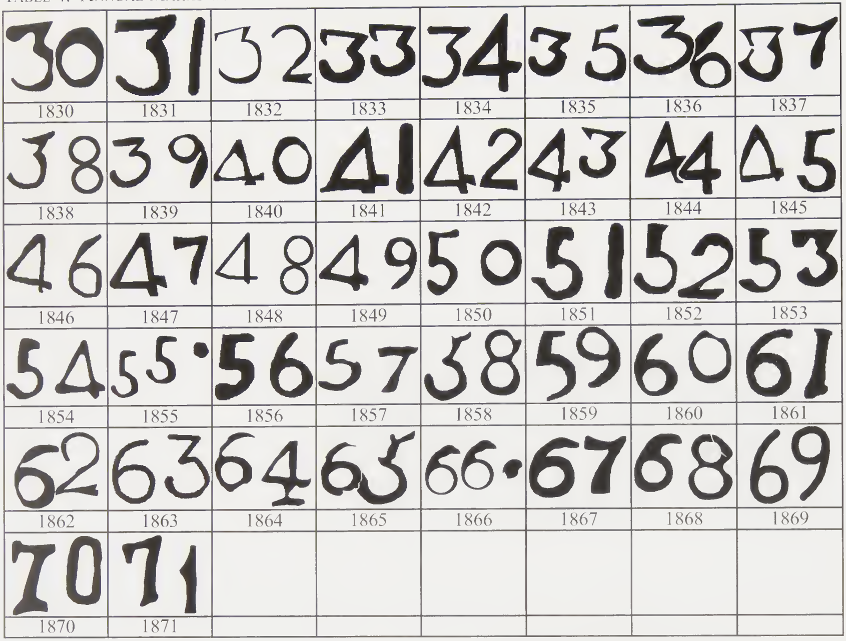
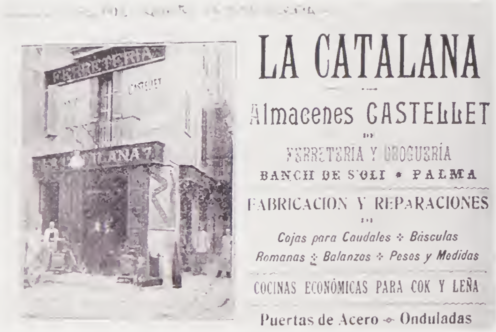
TABLE 4: ANNUAL MARKS WITH TWO NUMBERS



30	31	32	33	34	35	36	37
1830	1831	1832	1833	1834	1835	1836	1837
38	39	40	41	42	43	44	45
1838	1839	1840	1841	1842	1843	1844	1845
46	47	48	49	50	51	52	53
1846	1847	1848	1849	1850	1851	1852	1853
54	55•	56	57	58	59	60	61
1854	1855	1856	1857	1858	1859	1860	1861
62	63	64	65	66•	67	68	69
1862	1863	1864	1865	1866	1867	1868	1869
70	71						
1870	1871						

The use of this verification system was replaced around 1870/72, since when ornamental capital letters in alphabetic order have been used, later followed by small letters in the same order.

Marks of makers appear on the trade weights only in the second half of the 19th century. Most of the makers on Mallorca seem to have been smiths or of similar professions.



LA CATALANA

Almacenes CASTELLET

DE

FERRETERIA Y DROGUERÍA

BANCH DE S'OLI • PALMA

FABRICACION Y REPARACIONES

DE

Cajas para Caudales ∻ Básculas

Romanas ∻ Balanzos ∻ Pesos y Medidas

COCINAS ECONÓMICAS PARA COK Y LEÑA

Puertas de Acero ⟡ Onduladas

FERRETERIA
CASTELLET
CATALANA

Figure 12. ←← Examples of scales with the mark Castellet are known and prove that they produced their own balances.

Translation: The CATALAN, Castellet's Store, For Hardware and Drugs, Banch de S'Oli, Palma, Makers and Repairers of Safes, Steelyards, Balances, Weights and Measures, Economical Kitchen Stoves using Coke or Wood, Rolling Steel Shutters.

While most of the time it shared the fate of the other Balearic islands, especially during the 18th century, Menorca faced some phases of foreign occupation:
→ 1708 it became British with a governor in Mahon, based on the treaty of Utrecht.
→ 1756 it was occupied by French troops,
→ 1763, in the treaty of Paris, Menorca was restored to Britain
→ 1782 it was again conquered, this time by armies from France and Spain,
→ 1783 given back to Spain
→ 1798 – 1802 again the British occupied Menorca

In the periods when the British ruled the island, a special type of weights was in use, different from any of the others. In 1824 Richard Kane, governor of Menorca, ordered traders to exchange their former weights (made of iron) with this type of bronze weights. The shape is typically round, possibly derived from the shape of English trade weights. They are said to have been imported from England. The material could be bronze. Within the letters G and R different types of crowns are known, possibly reflecting different kings (George I –III), but a clear relation, that is, based on the known verification marks in England, cannot yet be identified.

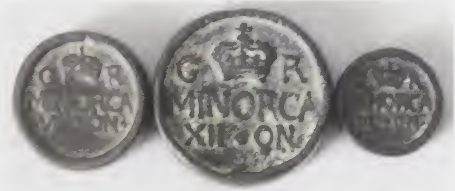


Figure 13. ➘➘ Weights for VI, XII and III onza.

The weights known by us represent mass values from XXXVI (36 onza), XII (12 onza), VI, III, II, I and ½. The 36 onza stands for the "lliura carneicera", being three times the normal libra of 400 gr of Menorca. A different type exists where the weights between 36 and 3 onza have a round handle [Figure 14].

On the few weights in our collections, letters, numbers and other signs can be found, most probably proof of a verification system during this specific historic area. One person responsible for weights and measures on Menorca seems to have been the Greek Theodore Alexiano after 1763 and till 1775[13].

The islands' weight systems reflect the astonishingly varied cultures that ruled, giving collectors the opportunity to discover most interesting weights and measures.

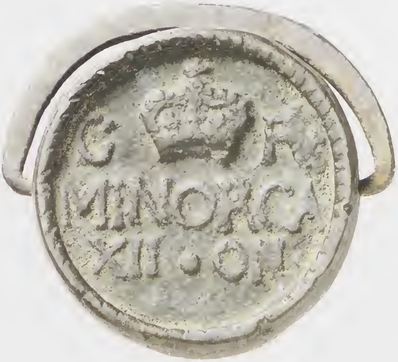


Figure 14. ➘➘

Notes & References:

1. The Balearics are a group of islands in the Mediterranean Sea, geographically between Spain and Italy. Politically they are a part of the Kingdom of Spain as one of the autonomous regions. The name originated from the Greek word "ballein" for throwing, as the people on the islands were in antiquity famous for being very good in the art of slinging stones.

2. To say that the found values in metric units are difficult to interpret would be an understatement. For Mallorca we took, just as examples, the legally published values of 1852, as shown in *Pesas y medidas espanolas antiguas* 1999 published by Centro Espanol de Metrologia. Such do not exist for Menorca, as the publication speaks only about the Balearics. Anyhow it is better not to believe too strictly in such figures if they claim to be very precise. The spelling of the names differs between Castilian and Catalan/Mallorquin, so that measures can be found in literature e.g. either under C or Q (Cuartera/Quartera). Additional units exist for rum and aquardiente (a local brandy).

3. The use of the Arabic name rotolo is mentioned in several Spanish books comparing money, measures and weights of the time. Also an American source from 1850 (Alexander, *Universal dictionary of weights and measures*) speaks about the rotolo of Mallorca, for which several sources give a mass of about 420 grams. This confusion is most probably derived from the fact, that on Mallorca goods sold as gross weight, were weighed using a unit which had a 4% higher mass than the normal libra, also called a terca. The two different units can be found on the Roman scales from Mallorca.

4. - Sevillano, F *Pesas y medidas en Mallorca desde el siglo XIII al siglo XIX*, 1974.
   - Forteza, R J, "Con amidaven, pesaven i mesuraven els nostres avantpassats", *Jornades d'Estudis Locals, III.*
   - Lluis Pol, J "De pesos i mesures", *Sa Placa/Parenostic* 2006.

5. "Pesas y medidas espanolas antiguas; Padrones del siglo XIX anteriores al Sistema Metrico", *Centro Espanol de metrologia*, Madrid, 1999, gives a good overview, including pictures of many measures and weights of the 1850s and gives the values in a Royal decree of 1852. The time before was even more complex. Verification has been done on Mallorca for centuries; the verifiers were called a mostassaf, working on Mallorca since 1334.

6. There are several theories as to why the libra was 407 gr in Mallorca, including its possibly being of Arabic origin. The Arabic root is historically probable due to the Islamic occupation of the peninsula for centuries. The Balearics were occupied too, even though later, but on islands things do change less quickly. Also the original value of the libra in Barcelona was reported at different masses.

7. Reinhard Kremer of the Pfundmuseum in Hofbieber-Kleinsassen mentioned that several times. Examples for Spain are proven by the book mentioned in reference 3.

8. Mercant i Ramírez, Jaume E., *Historia de la farmacoterapia: siglos XVIII y XIX. La farmacia monástica de la Real Cartuja de Valldemossa*, 2008

9. 10/12/1823.- Bando prescribiendo que los pesos de los vendedores deberían ser de bronce y de figura octaedra, a partir del 1º. de enero de 1824.

10. The name 'adarmes' shows the Arabic influence as it is derived from the Arabic term *ad-dirhem*. The Dirhem was a unit of mass commonly used in Arabic countries before metrification.

11. Many of the verification marks have been published before in EEZ 2010, (Europäische Eichzeichen) based on the work of the authors. This table shows more verification marks than EEZ does, as we have identified more since 2010. We thank Gregor Linkenheil for the drawing of the marks.

12. This one is very unusual as Jews were not allowed to work on Mallorca until about 1820. The use of the symbol has therefore an especially strange background.

13. Taken from *Desmond Gregory; Minorca, the illusory prize; 1990.* Alexiano got £30 annually for this job.

Authors' Biographies:

Francisco Valles Llabres lives in Binissalem, in the center of the Mallorca not far from Pigue Mayor. The town is also recomended for some of the best wines produced on Mallorca. He is married, has two children and works for a Spanish airline.

Dr Ludwig Ramacher lives in Wachtendonk in the west of Germany near the Dutch border. Wachtendonk has historical relations to Spain, as having been a part of the Spanish Netherlands. The town has been several times destroyed in the Spanish/Dutch wars. He is married, has one child, and works as a chemist in Germany's largest waste management company.

Weighing at the Banks 1: The Coming of the Gold Standard

BY NORMAN BIGGS

Prologue

In 1601 the mass of the English coinage was fixed so that one troy ounce (31.1 g) of sterling silver was equivalent to 5s 2d in coins. That was the silver standard, and it meant that the official mass of the silver crown (worth 5s) was 30.1 g. It was also the official Mint price for silver - that is, the price that the Mint would pay for bullion. The 5s 2d per ounce standard survived for over two hundred years, even though the market price for silver often rose above this level, resulting in a lack of silver for coinage purposes, and a consequent lack of good silver coins coming from the Mint. In fact, by the 1690s the state of the silver coin in circulation was quite atrocious: the coins were worn and badly clipped, and counterfeits were common. There were strong suspicions that the clipping was being done systematically, by goldsmiths and others who handled quantities of coins.

At that time the London goldsmiths had begun to take on the functions of commercial bankers, in the sense that we would use the term today. For centuries they had been accustomed to weighing the coins that passed through their hands, and mostly that would have been done using weights denominated in the troy system of ounces, pennyweights and grains. Additionally the goldsmith-bankers would have used coin-weights: that is, weights made specifically for checking the mass of a single coin. In 1695/6 the government decided that the clipped silver coins must be replaced, and there was much legislation, some of it thoroughly confusing[1]. It seems that both in practice and (at times) in law, the old silver coins were valued by their weight, and in such circumstances it became necessary to check that a handful of coins offered in payment contained the proper amount of silver, whatever their face-value might be. For this reason the goldsmith-bankers (and probably others engaged in trade) needed another class of weights, corresponding to amounts of money commonly received in payment, such as sixpence, a shilling, or five shillings. One such weight is shown in Figure 1. This weight can be dated fairly precisely by the initials WH and the ewer stamped on it[2]. The maker, William Hayward, was a leading member of the Founders Company in London, and he is known to have been active in making weights in the years 1690-1712. The weight shown below could have been used for checking that one silver crown was of full weight, but it is likely that its primary function was to ensure that a handful of smaller coins contained silver worth five shillings in all.

Other weights of this kind have been recorded, but they are rather scarce, probably because they were used only for a limited period. Table 1 lists the main denominations. Most of these weights were flat round discs of brass, like the one shown in Figure 1, but some bronze cup-weights were also made. These

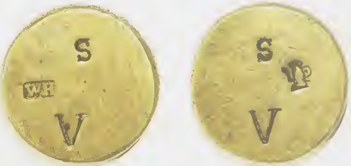


Figure 1. ►► A weight for checking five shillings-worth of silver, c1695-1700.

Table 1.

Denomination	Value in Pence	Usual Symbol	Official Mass Grains	Official Mass Grams
Crown	60 pence	VS	464	30.10
Halfcrown	30 pence	XXXD	232	15.05
Shilling	12 pence	XII D	93	6.02
Sixpence	6 pence	VI D	46	3.01

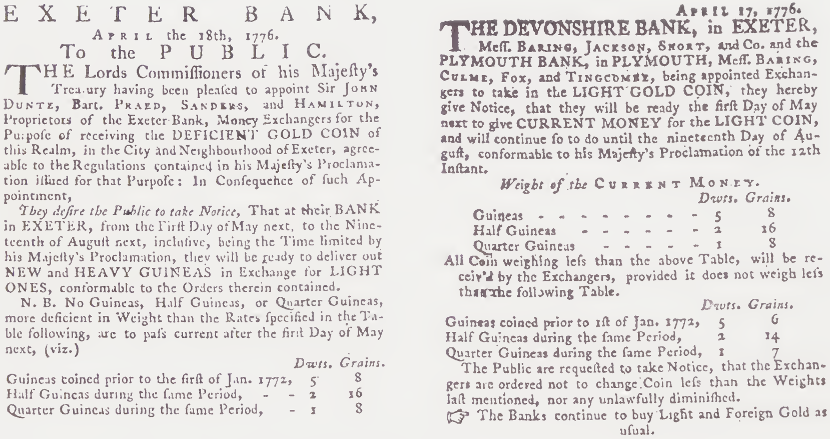
weights can be regarded as the precursors of the weights used by banks in the 19th and 20th centuries for checking coins in bulk, many of which will be described later in this series of articles.

In addition to the silver coins, gold coins have circulated in the British Isles since the fourteenth century. Because silver was the standard of value throughout this period, the value of a gold coin was expressed in shillings and pence, and the value could (and did) change over time. In 1663 the coin that we know as a guinea was introduced. Initially its value fluctuated, for example for some months in 1695/6 it was worth over 29 shillings, before stabilising at the now-traditional value of 21 shillings in the first half of the eighteenth century. Coin-weights for checking the guinea were produced from the reign of William and Mary (1689-1694) onwards, and many types are listed in the standard work by Withers and Withers[3]. The unofficial standard mass of a 'good' guinea was 5 dwt 9 gr, and this is often shown on the weights themselves. These weights would have been used by anyone whose business involved payment in gold, including of course the goldsmith-bankers.

Around the middle of the eighteenth century, banks of a different kind began to appear – the so-called 'country banks'. They often began as offshoots from commercial firms, and frequently the financial activities soon became more profitable than the commercial ones[4]. From this time onwards, the banking sector began to play a significant role in the circulation of coins.

The legislation of 1774-76 and its aftermath

In the years 1774-76 there was a complete overhaul of the gold coinage in England. As with the recoinage of silver in 1696-99, it was the subject of much legislation. There were several stages, involving the withdrawal and recoinage of old coins, the details of which have been described elsewhere[5]. In every large town persons were appointed by the Treasury to take in the old coins and issue the new ones. Among them were some of the newly-established country banks. For example, in 1776 two Exeter banks advertised that they had been appointed by the Treasury to act as exchangers (Figure 2)[6]. The Exeter Bank had been founded in 1769. It proved to be a successful venture, and after several amalgamations it became part of what is now the Nat West Bank. The Devonshire Bank was founded in 1770, but it was rather less successful, closing after a crash in 1810.



EXETER BANK,

APRIL the 18th, 1776.

To the PUBLIC.

THE Lords Commiſſioners of his Majeſty's Treaſury having been pleaſed to appoint Sir JOHN DUNTZ, Bart. PRAED, SANDERS, and HAMILTON, Proprietors of the Exeter-Bank, Money Exchangers for the Purpoſe of receiving the DEFICIENT GOLD COIN of this Realm, in the City and Neighbourhood of Exeter, agreeable to the Regulations contained in his Majeſty's Proclamation iſſued for that Purpoſe: In Conſequence of ſuch Appointment,

They deſire the Public to take Notice, That at their BANK in EXETER, from the Firſt Day of May next, to the Nineteenth of Auguſt next, incluſive, being the Time limited by his Majeſty's Proclamation, they will be ready to deliver out NEW and HEAVY GUINEAS in Exchange for LIGHT ONES, conformable to the Orders therein contained.

N. B. No Guineas, Half Guineas, or Quarter Guineas, more deficient in Weight than the Rates ſpecified in the Table following, are to paſs current after the firſt Day of May next, (viz.)

	Dwts.	*Grains.*
Guineas coined prior to the firſt of Jan. 1772,	5	8
Half Guineas during the ſame Period, - -	2	16
Quarter Guineas during the ſame Period, -	1	8

APRIL 17, 1776.

THE DEVONSHIRE BANK, in EXETER, Meſſ. BARING, JACKSON, SHORT, and Co. and the PLYMOUTH BANK, in PLYMOUTH, Meſſ. BARING, CULME, FOX, and TINGCOMBE, being appointed Exchangers to take in the LIGHT GOLD COIN, they hereby give Notice, that they will be ready the firſt Day of May next to give CURRENT MONEY for the LIGHT COIN, and will continue ſo to do until the nineteenth Day of Auguſt, conformable to his Majeſty's Proclamation of the 12th Inſtant.

Weight of the CURRENT MONEY.

	Dwts.	*Grains.*
Guineas - - - - - - - -	5	8
Half Guineas - - - - - -	2	16
Quarter Guineas - - - - -	1	8

All Coin weighing leſs than the above Table, will be receiv'd by the Exchangers, provided it does not weigh leſs than the following Table.

	Dwts.	*Grains.*
Guineas coined prior to 1ſt of Jan. 1772,	5	6
Half Guineas during the ſame Period,	2	14
Quarter Guineas during the ſame Period,	1	7

The Public are requeſted to take Notice, that the Exchangers are ordered not to change Coin leſs than the Weights laſt mentioned, nor any unlawfully diminiſhed.

☞ The Banks continue to buy Light and Foreign Gold as uſual.

Figure 2. ↗ ↗ Advertisements for exchanging light gold coin at banks in Exeter, 1776.

One of the provisions of the recoinage of gold was that after the first of May 1776 no guineas weighing less than 5 dwt 8 gr should be used as currency. Many types of coin-weights on this 'New Standard' were produced. Several of them are shown in Figure 3. The first one was made by Street and Pyke of Bridgwater, and was advertised in Exeter in 1775[7]. Such weights would have been familiar in the banks of the time, both in London and the country.

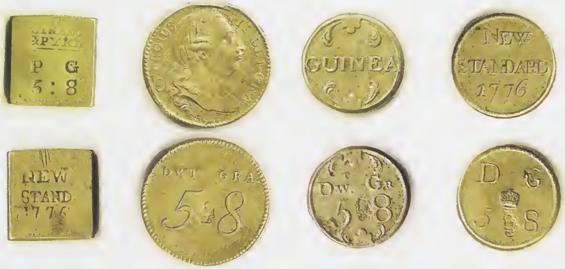


Figure 3. ←← Guinea weights for the New Standard. [Both sides are shown, obverse and reverse.]

By the last quarter of the 18th century many country banks had been established. In addition to weighing individual coins, most of them also weighed gold bullion (including old worn coins) in large quantities, but this would have been done using weights denominated in troy ounces and pennyweights. A few weights marked for 2 guineas or 5 guineas have been reported, but there is no reason to suppose that weights denominated in larger numbers of guineas were in regular use.

The gold standard

The heyday of the guinea came to an end in 1797, when the problems created by the Napoleonic Wars led to a financial crisis in which the use of gold coins was severely curtailed. There followed a period of about twenty years during which there were several attempts to fill the gap left by the absence of gold, including the issue of banknotes and large silver coins. In 1804, Mathew Boulton was authorized to use his powerful machinery to obliterate the design on Spanish silver dollars and replace it with a design asserting that the coins were now Bank of England tokens, worth five shillings. The conventional mass of these coins was 416 grains (27 g). Unfortunately, by 1811 the price of silver had risen again, and the Bank of England was forced to withdraw the dollars at the price of 5s 6d, in order to prevent them going abroad. In fact, this price was still below the market price, and many people were prepared to offer more[8]. An interesting bronze bell-weight may be related to these events (Figure 4). It has been constructed by modifying a typical bronze trade weight of 8 ounces averdepois. The handle is stamped 7 DLR and the base is stamped JESSOP & Co. The mass of this object is 188 g, corresponding to one dollar at 26.9 g, which is very close to the accepted mass of 416 grains. The choice of seven as the denomination might be explained by the fact that if seven dollars were bought for £2, then a dollar was worth about 5s 8½d, which is the kind of price being offered unofficially in 1811. Jessop and Co. was an engineering firm based in London, and it appears that they conducted banking operations. In colonial India, where they had major interests, they are recognized as being one of the first commercial banks in that country. The firm grew to be one of the largest in India, and was eventually nationalized in 1973, only to be privatized again in 2003.

Following these adventures in coinage, there were long debates among politicians and economists about what should be done. In due course it was decided that a standard based on gold rather than silver was the answer. In 1816-17 a new gold coin called a sovereign was introduced, valued at 20s and with a mass of just over 123 grains, this being consistent with the old guinea at 21s. The silver coinage became subsidiary, and was consequently minted at the slightly reduced rate of 5s 6d to the troy ounce, instead of 5s 2d.

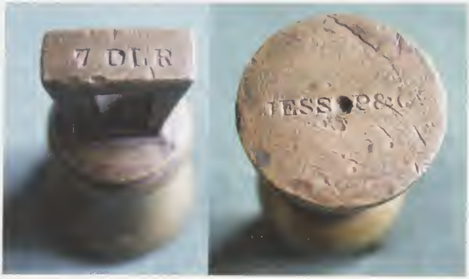


Figure 4. ↗ ↗ A weight used for checking 7 Bank of England dollars, c1811?

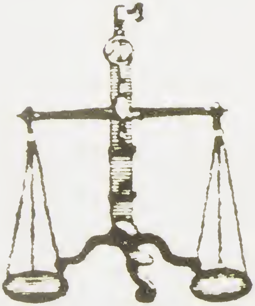


Figure 5. ↖ ↖ A Bankers Scale advertised in 1828 (enlarged from a contempory advert).

Weighing sovereigns in batches at the banks

After the introduction of the sovereign, the circulation of gold coins increased enormously. The banks had to handle large numbers of sovereigns, and special 'Bankers Scales' were produced for the purpose. Figure 5 is a drawing of a scale taken from an advertisement[9] by the Birmingham makers Bourne & Smith in 1828. These are simple scales made of brass, with an equal-arm beam and a tripod base. The pans rest on the table and, when the operator is ready to check if the balance is correct, a lever is depressed and the pans are raised. This type of scale was still being used in banks in the middle of the twentieth century.

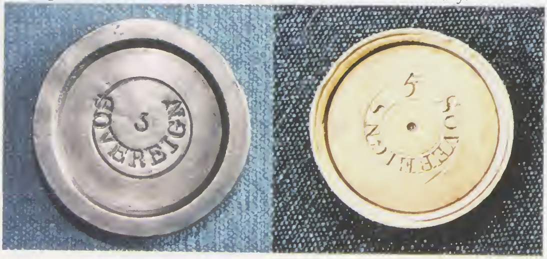


Figure 6. → → Two weights for checking batches of 5 sovereigns, c1820-40.

The weights shown in Figure 6 probably belonged to sets denominated in multiples up to 100 sovereigns or more. In the next part of this article I shall discuss these sets and the ways in which they were used.

Notes and References

1. Ming-Hsun Li. *The Great Recoinage of 1696 to 1699*. London: Weidenfeld and Nicholson, 1963. See especially Chapters 7 and 10.
2. Norman Biggs. 'Coin Weights made by the Founders', *British Numismatic Journal* 71, 2001, 111-118.
3. Paul and Bente Withers. *British Coin-Weights*. Llanfyllin: Galata, 1993
4. Glyn Davies. *A History of Money*. Cardiff: University of Wales, 1994.
5. Norman Biggs. 'Provincial Coin Weights in the Eighteenth Century', *British Numismatic Journal* 74, 2004, 102-120.
6. *Trewman's Exeter Flying Post*, 26 April 1776. There are several similar advertisements in the period 1773-1776.
7. *Trewman's Exeter Flying Post*, 10 February 1775.
8. Maberley Phillips. *The Token Money of the Bank of England*. London: Effingham Wilson, 1900. See also: E.M. Kelly, *Spanish Dollars and Silver Tokens*, London: Spink, 1976. A 20 dollar weight that may be relevant is illustrated in *Equilibrium*, p.2245.
9. *Wrightson's Directory of Birmingham*. Birmingham, 1828.

Book Review

Newton and the Counterfeiter by Thomas Levenson. Published Houghton Mifflin Harcourt (Boston 2009) ISBN 978-0-15-101278-7, and by Faber and Faber (London 2009) ISBN 978-0-571-22992-5.

Collectors of English scales and weights will know that, towards the end of the seventeenth century, the coinage was in a sorry state. Many of the coins in circulation had been made in the medieval way, by being hammered out manually. The silver content was supposed to represent the face value of the coin but, since the edges were irregular, little slivers of metal could be clipped from a coin, reducing it in value, while the 'clipper' gradually accumulated a useful store of silver. In addition, the process of hammering led to many imperfections, making it easy to forge the coins. The object shown in Figure 1 is a forgery of a halfcrown of the Commonwealth period; it is in untypically fine condition, and must have been put aside as a curiosity very shortly after it was made. The object shown in Figure 2 is another fake halfcrown, in this case a Charles I type. Like the first one, it was made by covering a core of base metal with a layer of silver, but it is in very poor condition. In the 1690s such crude forgeries could circulate freely, because the genuine coins were in a similarly distressed condition. Some of the forgeries were gilded so that, until the thin coating of precious metal wore off, the coin could be passed off as gold. These practices led to an increase in the use of scales and weights for checking individual coins, and for checking batches of coins by weight, as explained by Norman Biggs in his article on *Weighing at the Banks*.

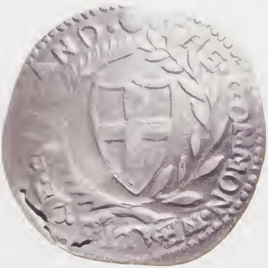


Figure 1.

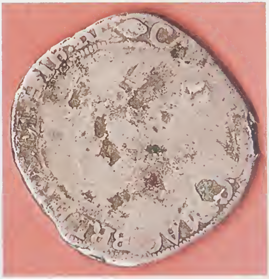


Figure 2.

The book under review is a lively account of an episode that occurred in the 1690s, involving a coin-forger and the famous mathematician, Sir Isaac Newton. The sub-title of the book is *The master-criminal, the great genius, and the plot to destroy the Royal Mint*. In fact the author deals with these three topics separately until finally managing to link them more than halfway through the book. The master criminal was William Chaloner, and his aim was to gain access to the Mint and its facilities rather than destroy it. In order to explain how Newton and Chaloner came into contact, Levenson also has to deal with a fourth topic – the money supply and its problems in late seventeenth-century England. He begins with a short chapter which serves as a preface, showing Newton as Warden of the Royal Mint interrogating a prisoner in Newgate, and then spends a lot of time explaining how Newton reached this situation, with brief diversions on the early life of Chaloner.

The book therefore lacks unity, and the author faces other difficulties. There is plenty of information about Newton available, from the memoirs of associates to his own letters. Unfortunately (for someone trying to make his life interesting), Newton had spent decades as a virtual recluse at Trinity College, Cambridge. There he had dedicated himself to abstruse calculations on such matters as the orbits of the planets, secretly carrying out experiments to try to prove that alchemy was possible, and occasionally indulging in a little light gardening. Intellectually the matters discussed are interesting, but Newton did not disclose his motives or emotions. In contrast, there is only one source of information about Chaloner's early life, and that is a biography hastily written to cash in on his temporary notoriety after his execution. One would like more about this man who turned to 'get-rich-quick' schemes at an early age, who gained the confidence of Jacobite sympathisers and then betrayed them to the authorities for money, posed as a doctor, afterwards decided to literally make money himself, and then betrayed himself by his extravagant life-style when his coining activities proved very profitable, losing everything and narrowly escaping the gallows.

Levenson tries to fill in both biographies with a great deal of speculation which cannot be proved conclusively. For example, in order to explain how Newton became Warden of the Royal Mint, Levenson deals at length with the writing and eventual publication of Newton's work on the movement of the heavenly bodies, his *Principia*, which brought respect from other scientists and fame in influential circles. About this time, however, his hopes of achieving the transmutation of base metals, alchemy, seem to have finally collapsed, and a warm friendship with a handsome young man, one of the few emotional relationships of his life, also faded away. According to Levenson, Newton experienced some kind of nervous breakdown, and resolved to enjoy the success of the *Principia* by finally abandoning Trinity and moving to London. So he accepted the offer of the post of Warden of the Royal Mint, after he was assured that it would make few demands on his time and energy. This proved to be completely untrue.

When Newton arrived at the Mint large machines had already been introduced which were producing regular coins with milled edges. These were much more difficult to forge, but progress was lamentably slow. Then another disaster attacked England's money supply. Silver was marginally more valuable in France than in England. People with an eye to profit simply collected all the English silver coins they could lay their hands on, melted the silver into bullion, and made a profit by selling this silver abroad. Destroying the king's coins was illegal but it was also profitable, so of course it was done. The result was an acute shortage of silver currency in England. People just didn't have enough coins to pay their bills or their taxes. Various stratagems were tried to solve this problem, apart from vainly trying to stop the silver vanishing overseas. The newly-established Bank of England issued promissory notes, promising to 'pay the bearer on demand' the face value of the note. Eventually this would lead to the issue of the bank notes we have now.

Levenson's description of the state of the coinage is fascinating, but to a member of ISASC it is also very frustrating. The coinage depended on the weight of precious metal it contained, and measurement of the coins would also show if they had been clipped. But Levenson fails to give any satisfactory details of the weights and measures, or the instruments used to determine them. When he says that *money which should have tipped the scale at 400 ounces actually weighed 240 ounces at Bristol, 203 at Cambridge, and at rival Oxford, a mere 103*, I would like to know how many coins were weighed and how. I would also like to know something about quality control at the Mint.

Once Newton realised the state of the currency, and also the inefficiency with which the Royal Mint was run, he refused to accept that his new post was a sinecure and set about improving the situation. He used his intellect, his powers of reasoning, and the attention to detail which he had formerly used in his scientific experiments. Soon the output of the Mint had increased to the point where replacing all the old coinage in a reasonable time was achievable.

However, forgers were still active. Chaloner, reduced to poverty after his earlier brushes with the law, decided to return to making money again, but the processes available to him with his small resources meant a limited production and not enough profit. His plan to overcome these problems was very ingenious. He tried to convince influential people that the officials of the Mint themselves were corrupt and were using the machinery and dies to forge coins. He claimed that if he were given access to the Mint, he would be able to cure these abuses. He actually reached the point where Newton's superiors instructed him to allow Chaloner access to the Mint's resources. Newton ignored this instruction, very wisely, for Chaloner's real intention seems to have been to gain access to the legitimate machinery and dies to enable him to produce better forgeries, and to use the Mint's procedures to distribute the forgeries – always the most risky part of forging coins. Newton was in a difficult position because there were undoubtedly some abuses taking place in the Mint, but Chaloner went too far when he implied that Newton was personally involved in these abuses. One of Newton's responsibilities was to pursue and prosecute coiners, which he did enthusiastically. After Chaloner's insinuations, Newton was determined to destroy him. It seems incredible to us, with our detailed records, that people had not identified Chaloner, the man eager to reform the Royal Mint, as the Chaloner who a few years before had nearly been hanged for forging coins. Newton made the connection and set about accumulating evidence about Chaloner's criminal past and present. He found enough witnesses to have Chaloner arrested, brought to trial, and sentenced to death, though on the basis of hearsay and circumstantial evidence which would not be accepted nowadays. In his last days Chaloner wrote again and again to Newton, offering to betray his associates in return for his life, and then simply begging abjectly to be allowed to live. Newton ignored his entreaties. Forging the coinage was regarded as a form of high treason and carried the same penalty, but coiners were granted the mercy of being hanged till they were dead before they were drawn and quartered, and this was Chaloner's fate. His nemesis, Newton, lived on, became Master of the Mint, prospered (though he was a victim of the South Sea Bubble, an early pyramid scheme) and died honoured and respected.

Levenson's book has its faults of structure and omission, and resorts too often to conjecture. The words 'possibly' and 'perhaps' appear far too often. But he does include a great deal of fascinating detail about a period of history which saw the gradual growth in the power of the government and the reduction of that of the sovereign, and the emergence of England as a great trading nation. Where there are riches there will always be criminals trying to get a share the easy way, and Levenson has unearthed some fascinating stories and personalities to give interest to his otherwise rather thin narrative.

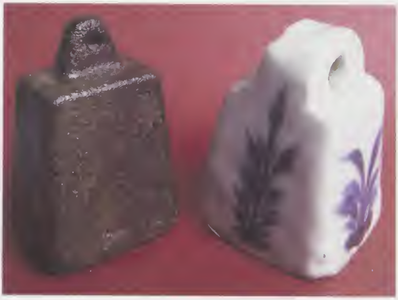
SHEILA HOLROYD

Chinese Weights?

BY DIANA CRAWFORTH-HITCHINS

I was trailing round a slightly dubious antique shop behind Andrew, thinking that there was nothing for me, when Andrew straightened up holding two iron weight-shaped objects. He commented that they were about the same shape as the pottery Chinese weight I had brought home from Belgium. I objected that they had no adjustment underneath, so were probably for something other than weighing, but they were so cheap that I took a gamble and bought them.

On scrabbling round my weights, I found the pottery weight, one of many that have "escaped" from China over the last ten years. I had chosen it for its pretty floral design, and had kicked myself since for not choosing one with Chinese writing on it. However, I liked it, and was happy to have one of the few variations made of pottery, even though they were condemned for their unreliability.



I weighed the pottery one at 175.6 grams. Then I weighed the iron ones, 353.8 grams and 365.8 grams respectively. So what is double 175.6? It is 351.2 grams. So have I got weights from the same system? I can't pretend that they are very accurate, but they would probably be considered good enough for general trade purposes.

If anybody can tell me what the units are, I would be grateful.

Giuseppe Tagliabue's Set of Hydrometers for the U. S. Internal Revenue

BY ULRICH BIBER

Giuseppe Tagliabue's set of hydrometers, made for the U. S. Internal Revenue, was surely not a new invention or a technical innovation. But with outstanding craftsmanship and the combination of a handy, comfortable portable ensemble, it stands out as an example of the craftsmanship of his time.

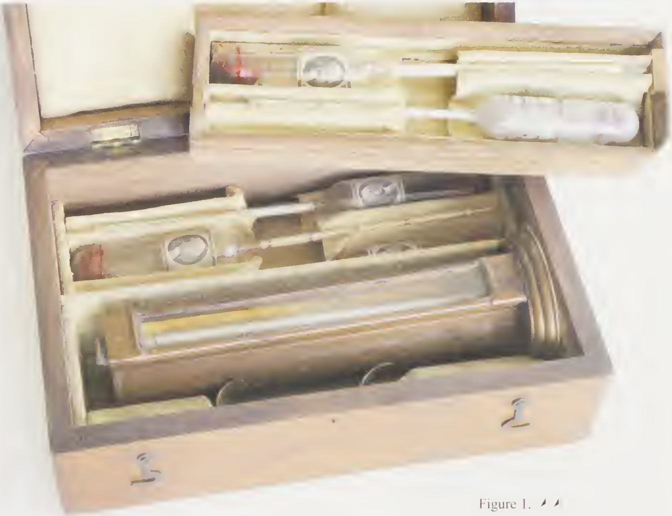


Figure 1.

Description

In an accurately worked wooden leather-lined case (10.6 x 6.7 x 4 in.), there are five hydrometers on two levels and a copper vessel with integrated thermometer (Fig. 1). The hydrometers have different scales to cover the complete measurement range of alcohol:

1. 0 - 100
2. 80 - 120
3. 100 - 140
4. 135 - 170
5. 160 - 200

Each:
Percents of proof spirit at 60° Fahrenheit
Further statements:
G. Tagliabue, NY Pat. Oct 16th, 1866

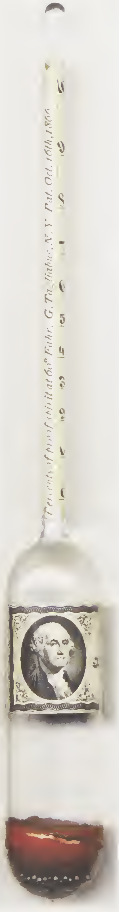

Percents of proof spirit at 60° Fahr. G. Tagliabue, N.Y. Pat. Oct. 16th, 1866

Figure 2.

The bottoms of the hydrometers are filled with small lead beads which are fixed with sealing wax to calibrate the hydrometers. Inside the stem of the float there is fixed a banderole with a portrait of the first American President, George Washington, and the notation: *U. S. Internal Revenue, Standard Hydrometer* and the signature of a Commissioner (Fig. 2 and 5).

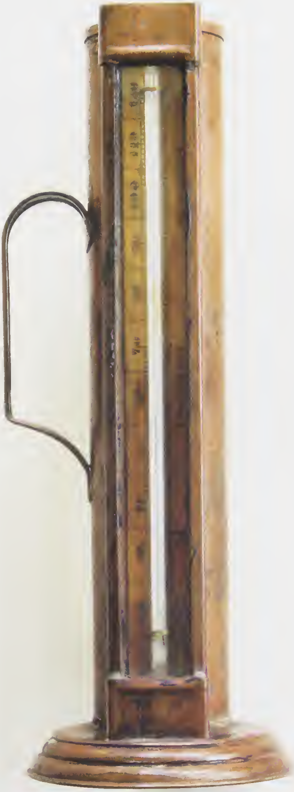


Figure 3 ◢◢ copper vessel ca. 22 cm high.

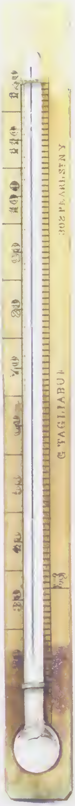


Fig. 4 ◢◢ Scale of Thermometer.

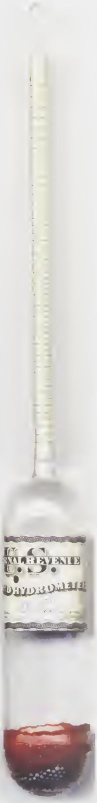


Fig. 5. ◢◢ Hydrometer, both sides with Fig. 2.

Some explanations:

Proof Alcohol: In continental Europe, we are used to measuring the content of alcohol in Vol %, and this is printed on the label of the bottles of spirits. For example, a mixture of pure spirits with water of 30 Vol % has a volume part of 30% pure alcohol. History took another path in England and the United States. The basis there was, and is, the proof-system. It came into existence in the 18th century, a time when chemical analysis was not available. In that time alcohol was mixed with gun powder and ignited. When the flame burned blue, the mixture of alcohol/water was "proof," with a yellow flame it was "over proof," and when it was unable to burn it was "under proof." The system in the United States shows twice the value as the European (except England) Vol. % system, or ABV-Standard (Alcohol by Volume). The method in England was a bit different than the American. So US 100 proof = 50 Vol % distilled alcohol + 50 Vol % water. These values are shown by Tagliabue's hydrometer.

The hydrometers made of glass with scales were not a particular invention of Tagliabue; they were in use since the 17th century. His idea was simply to put the hydrometers with different scales along with a vessel having an integrated thermometer (Fig. 3 and 4) in a case, and to put this ensemble into the hands of the government and other administrative offices for inspection purposes.

Taxes for distilled spirits were—at all times, for all governments—an important source of revenue. And therefore all governments made big efforts to assess these taxes in an accurate system. The opinion of the National Academy of Sciences' Committee on Proving and Gauging Distilled Spirits and Preventing Fraud was that Mr. Tagliabue's set of hydrometers are in accordance with these standards.

At the beginning of the fiscal year 1866-1867, therefore, the Treasury Department was in possession of the information necessary for the establishment of a new system of proving and gauging spirits and the authority for carrying it into effect. In his report for 1867, the Commissioner of Internal Revenue remarks on this subject as follows:

For several years there had been frequent complaints of a lack of uniformity in the inspection of distilled spirits in different sections of the country. The accounts of revenue officers were disturbed, and the interest of shippers prejudiced by difficulty in procuring their proper allowance for leakage. The Treasury, too, was frequently, it is presumed, unfavorably affected by an excess of such allowance. The secure, therefore, a uniform and correct system of inspection and gauging of spirits subject to tax throughout the United States, the Secretary of the Treasury, in February last, adopted the hydrometer of Mr. Tagliabue, of New York. This hydrometer was approved by a committee of the National Academy of Sciences, consisting of Professor Henry, General Meigs, and Professor Hilgard, and has been furnished, with an accompanying manual prepared and printed for that purpose, to collectors of the Internal Revenue for the use of duly appointed inspectors in their several districts. The caliper and head-rod system of gauging has been adopted likewise, and a manual of instructions on their use furnished revenue officers. The hydrometers are furnished by the manufacturer in sets of five, at a charge of eighteen dollars per set, and in sets of three at thirteen dollars. Seven hundred and thirty-four sets have been received from the manufacturer at a cost of $11,826.50, and about five hundred sets have been distributed to officers. Inspectors supply themselves at their own charge with the necessary gauging instruments. [Report of the Commissioner of Internal Revenue for 1868, p. xxxiii.]

Biography[2]

Tagliabue, Giuseppe, August 10, 1812–May 7, 1878, was born near Como, Italy. He was educated at the village school, and was sent to Como to learn cabinet-making. He was the son of Caesar Tagliabue, founder of the great scientific instrument business of London (by the way, it exists still today), and grandson of Caesar Tagliabue of Como, Italy, who was one of the first persons in the world to make thermometers in quantity. His father, Caesar Tagliabue II, was well established in London when his son, Giuseppe, was born. In 1826 he entered his father's establishment and there acquired the trade of thermometer maker. Upon completing his apprenticeship in 1829, Tagliabue, although only seventeen years old, left London and went to Rio de Janeiro to ply his trade. After spending two years there without experiencing any material benefit, he emigrated to New York with all his worldly possessions, which consisted of a bellows, a bundle of glass tubing, a pan of tallow, and less than five dollars.

Renting a single room on Water Street directly back of 298 Pearl Street, he began making and selling thermometers. His business soon outgrew these limited quarters and he acquired a four-story house at 298 Pearl Street, which not only served as his store and workshop but for a time was his residence as well.

For upwards of forty-seven years he carried on his trade, becoming one of the most prominent and successful instrument makers of the United States. To him came Kane and Hall, the Arctic explorers; Bache and Hilgard of the United States Coast and Geodetic Survey; Borden, the inventor of the process of condensing milk; and Havemeyer, the sugar refiner—all to secure the delicate instruments so necessary to their several undertakings.

Besides his thermometers he made a great variety of hydrometers, including original forms and new adaptations to meet the changing manufacturing requirements. Many of the instruments used by the Geodetic Survey were constructed by Tagliabue and his hydrometer for the proving of whiskey was officially adopted by the U. S. Internal Revenue Bureau. He was always enthusiastic about his work and gave considerably more attention to the excellence of his instruments than to the money he received. Between 1859 and 1871 he found time to perfect a few instruments of original design, which he had patented. These included a mercurial barometer; an apparatus for testing iron and coal; an instrument to determine the amount of water in a barrel of oil; a number of hydrometers; and an apparatus for determining the proof of spirits in fermented mash (Fig. 6). The design is nearly the same as Giuseppe Tagliabue's Set of Hydrometers for the U. S. Internal Revenue.

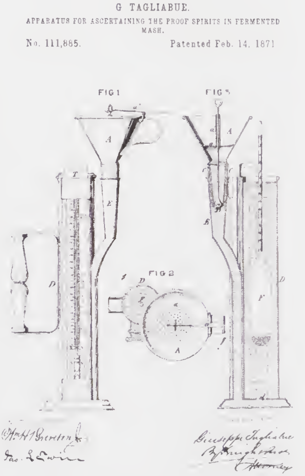


Fig. 6. US Patent 111885: apparatus for determining the proof of spirits in fermented mash.

These inventions were ever a source of loving pride to him and were profitable as well. He was married twice; his second wife was Adelaide Arniboldi of New York City, who with their six children survived him. He died at his home in Mount Vernon, N.Y. –May 7, 1878. His burial is located in Woodlawn Cemetery - New York City (Fig. 7).

Up to the beginning of the 20th century the establishment was carried on under the name C. J. Tagliabue Manufacturing Company, New York and produced still hydrometers (Fig. 8).

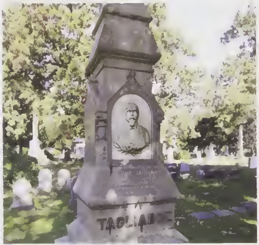


Fig. 7. Tagliabue's burial.

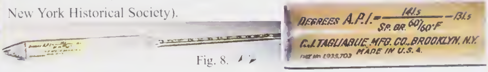

DEGREES A.P.I. = 141.5 / SP. GR. 60°/60°F − 131.5
C.J. TAGLIABUE MFG. CO., BROOKLYN, N.Y.
MADE IN U.S.A.
PAT. No. 1935703

Fig. 8.

Notes

1. From 1868 until 1913, 90% of all US revenue came from taxes on wine, beer, liquor and tobacco.

2. Article from *Dictionary of American Biography*, Vol. 18; Charles Scribner's Sons, 1936, New York (reference obtained from the New York Historical Society).

Book Review

Zbiory Metrologiczne by Aliny and Juliusza Gustowskich, pub 2011 by the Muzeum Dawnego Kapiectwa, ISBN 978-83-927888-8-1. 48 pages . 55 colour photographs.

This little book is a catalogue of the scales, weights and measures held at The Old Museum in Kapiectwa, Each scale has a small photograph with a short text in Polish beside it. As so few of our members speak Polish, it would be helpful to consider the book as a window into Polish and European scales.

As a collection, it covers the basic types nicely, with almost all the items being 20th century. The most interesting section is the pendulum scales, as pendulum scales for private use blossomed in Europe in the 20th century.

There is one unusual Polish person scale (Figure 1), and a Hauptner precision balance with a chain poise that is unusual. The pendulum egg scale by WSZ of Krakow is ugly and extremely desirable, and the Prussian maneur is dainty and elegant.

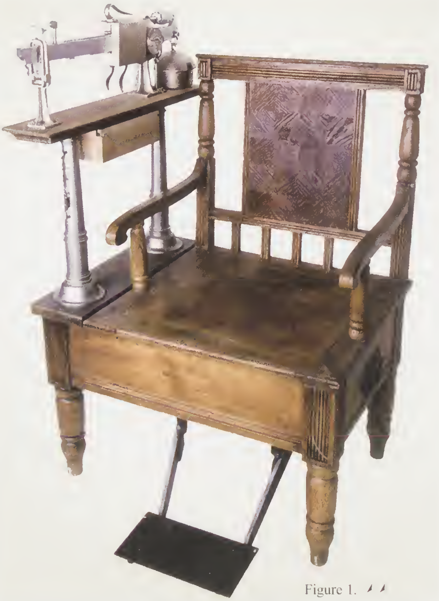


Figure 1.

The weights are mostly ordinary, but the Russian knobbed weight by Agrentajer, stamped 1879, is charming.

It is a pity that the authors did not use any British reference books to find out more about the many British items.

If you are a collector of 20th century European metrology, I recommend this book.

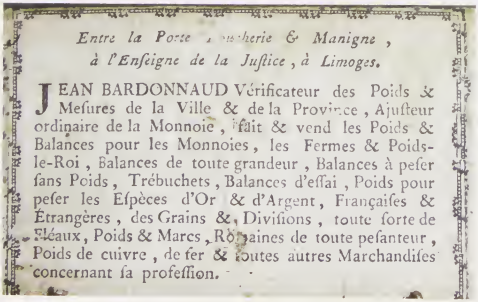
Note

Try Google Translate for translation from Polish.

Diana Crawforth-Hitchins

Coin Scale Label

Jean Bardonnaud was making scales around 1800, right in the middle of France. The label translates as: *Between the Butcher and the Manigne [Road], at the Sign of Justice, in Limoges. Jean Bardonnaud, Verifier of Weights & Measures for the town, & for the Province, Ordinary Adjuster for the Mint, makes & sells Weights & Balances for money, Tax collecting & Standard Weights, Balances of all qualities, Balances without weights, Rockers, Assay Balances, Weights for weighing gold & silver coins, French & Foreign, in grains & [their] divisions. All sorts of Beams, Weights & Stamps, Steelyards of all capacities, Weights of copper, of iron & all other Merchandise connected with that profession.*



Entre la Porte Boucherie & Manigne ,
à l'Enſeigne de la Juſtice , à Limoges.

JEAN BARDONNAUD Vérificateur des Poids & Meſures de la Ville & de la Province , Ajuſteur ordinaire de la Monnoie , fait & vend les Poids & Balances pour les Monnoies , les Fermes & Poids-le-Roi , Balances de toute grandeur , Balances à peſer ſans Poids , Trébuchets , Balances d'eſſai , Poids pour peſer les Eſpèces d'Or & d'Argent , Françaiſes & Étrangères , des Grains & Diviſions , toute ſorte de Fléaux , Poids & Marcs , Romaines de toute peſanteur , Poids de cuivre , de fer & toutes autres Marchandiſes concernant ſa profeſſion.

Metric Eccentricity

BY JOHN KNIGHTS

The UK has been totally metric since 2000 apart from some glorious quirky savings for pints, miles and troy ounces (only in the UK)! After a decade of somewhat typical British moaning the initial violent opposition now seems to have largely subsided to a position of tacit but grudging acceptance. Many customers still ask for their pound of apples and the trader wearily weighs out 450 grams or so and the transaction is completed with no further histrionics. Indeed,when I visited the USA a few years ago it actually looked quite quaint to see scales still displaying pounds and ounces, showing how soon the new becomes part of the 'status quo'.

I always find it quite amusing, given the amount of British vituperation against the metric system (as with most things considered a bit 'foreign'), how many of the hated units are actually named after people from the British Isles!

Amongst the predictable names from Continental Europe like Pascal, Coulomb, Bequerel, Volta, Siemens, etc., we see an impressive number of names of British people such as Faraday, Kelvin, Watt, Joule and even Maxwell if we include the superced 'cgs' version of the metric system. Even our American cousins, whose antipathy to the metric system is so manifest, it even features in 'The Simpsons', have contributed Henry and Tesla to the canon.

Foremost among the British names, is quite properly Sir Isaac Newton, whose name is logically applied to the unit of force. The 'newton'(N) is defined as the amount of force required to impart an acceleration of 1 metre per second per second to a mass of 1 kilogram. Rather fortuitously, the values derived for the metre and kilogram by Messrs Delambre and Méchaine, who dragged their perilous and weary way through Revolutionary France measuring their meridian, means that the value of the 'newton' comes out at approximately one tenth of a kilogram.

Thus, although it may appear a slightly peverse thing to do scales are actually made which are denominated in 'newtons', the value of which is taken as being equivalent to 0.1kg (more correctly '0.1kg force').

These are doubtless used for scientific purposes only, which is just as well, as any move to sell bananas by the 'newton' would make the head of a British 'metric martyr' explode!

The Spring Balance (Figure 1) is a laboratory instrument marked with the name of G. Cusson Ltd of Manchester. This business was formed in 1876 and still exists as a manufacturer and supplier of engineering, teaching, research and product testing equipment. I suspect the balance was actually made by Salter as they pretty much held the monopoly on spring based weighing.

The spring balance has a 1960s look but is probably a bit later. I recall doing physics in the 1960s and learning that forces were measured in 'dynes' (when not in 'poundals') rather than the 'newtons' that came along shortly afterwards, rendering all the 'cgs' units that had been painstakingly crammed into my head, totally obsolete.

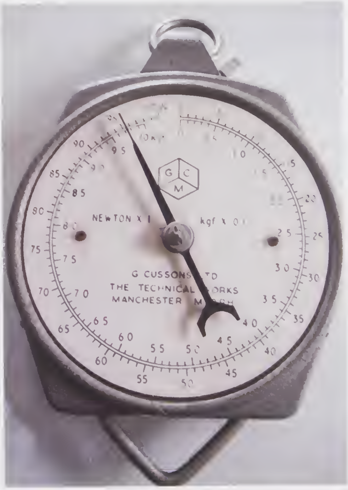


Figure 1. ➤➤ GCM Spring Balance. Capacity10 kgf x 0.1 kgf and 100 Newtons x 1 Newton.

Some Small Letter Scales

BY REIN KOK

This time I will show you some special scales. These are German products. The first one has the letters DRGM (Deutsches Reich Gebrauchs Muster) and DRPa (Deutsches Reich Patent angemeldet) at the bottom of the standard, just above the tripod. On fig.1 these letters are not visible. The maker's name is unknown. The beam moves with the help of a knife. This knife is fastened to the pillar. The beam with counterpoise is 31,5 cm in length and is graduated 0 – 500 grams. Above the graduations are notches for the hanging pan. The scale is 21,5 cm tall. Standard and counterpoise are of cast-iron, beam and pan are of brass. The pan measures 15,5 x 10,5 cm.

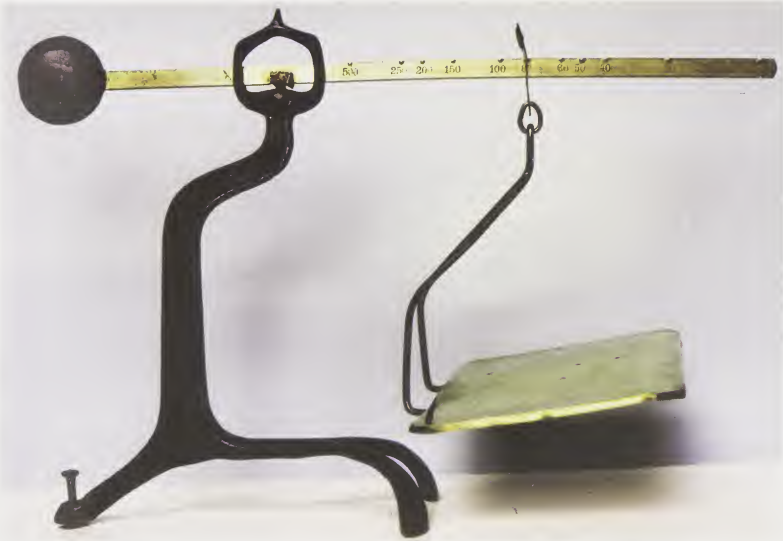


Figure 1. ↗ ↗ A letter scale with movable, suspended plate.

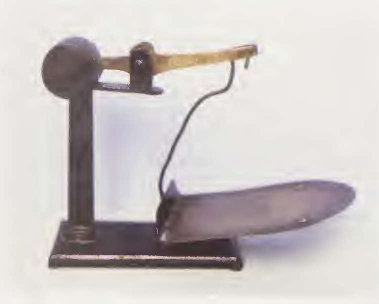
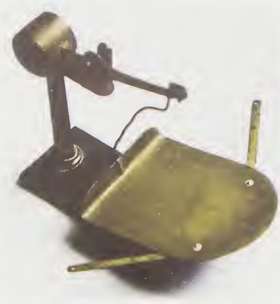
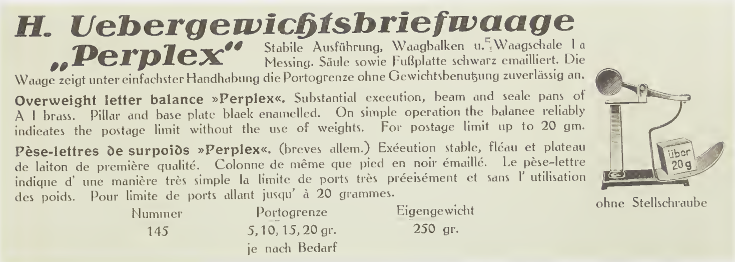


Figure 2. ↖ ↖ Scale for checking 20 g.

Figure 3. ↗ ↗ With expanded tabs under the load plate for larger envelopes.





H. Uebergewichtsbriefwaage „Perplex"

Stabile Ausführung, Waagbalken u. Waagschale I a Messing. Säule sowie Fußplatte schwarz emailliert. Die Waage zeigt unter einfachster Handhabung die Portogrenze ohne Gewichtsbenutzung zuverlässig an.

Overweight letter balance »Perplex«. Substantial execution, beam and scale pans of A I brass. Pillar and base plate black enamelled. On simple operation the balance reliably indicates the postage limit without the use of weights. For postage limit up to 20 gm.

Pèse-lettres de surpoids »Perplex«. (breves allem.) Exécution stable, fléau et plateau de laiton de première qualité. Colonne de même que pied en noir émaillé. Le pèse-lettre indique d' une manière très simple la limite de ports très précisément et sans l' utilisation des poids. Pour limite de ports allant jusqu' à 20 grammes.

Nummer	Portogrenze	Eigengewicht
145	5, 10, 15, 20 gr. je nach Bedarf	250 gr.

ohne Stellschraube

Figure 4. ↗↗ Listing from the catalog of Fisher & Schwahr from Leipzig, c.1930, price 2 Reichs.

The second scale is very small, measuring only 10,5 cm tall. It stands on an iron base of 9 x 5 cm (fig.2). The hanging pan is also 9 x 5 cm. At the underside of the pan are two arms that can be folded out for larger postal items (fig.3). The beam with counterpoise is only 9,5 cm and turns round an axis. The end of the beam is bent backwards. Between the bent-back piece and the beam an axis is fastened for the hanging pan. At the end of the beam are indications: "DRGM 20 Gr". For letters over 20 grams the counterpoise lifts up. This scale is called *Perplex* and is manufactured by Fischer & Schwahr of Leipzig (fig.4). It dates probably between 1910/20.

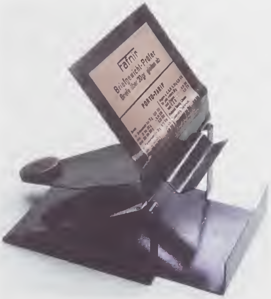
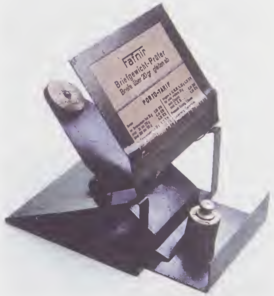
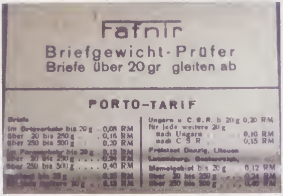


Figure 5. ↖↖ The *Fafnir* in unloaded state.

Figure 6. ↗↗ The *Fafnir*: an overweight letter will fall off.



A peculiar funny scale is *Fafnir* (fig.5). Just like the previous scale the weight capacity is 20 grams. Letters over 20 grams placed on the tab (down the text) go down and slide off the tab (fig.6). Fig.7 shows the rates for Russia, Hungary, Freistaat Danzig (now Gdansk in Poland) and Memelgebied (Memel Territory). The rates are in RM (Reichs Mark) and date from approximately 1937. As a young boy I collected stamps. I remember I had some stamps with an imprint "Memel". Do you know where this territory is? Before WWII, Germany reached eastwards to the border of Lithuania. Where the borders of Germany and Lithuania came together at the Baltic Sea was the town Memel. Now Memel is part of Lithuania and is named Kleipeda. After WWII, Germany lost a lot of its territory in East-Europe.



Fafnir
Briefgewicht-Prüfer
Briefe über 20 gr gleiten ab

PORTO-TARIF

Briefe
im Ortsverkehr bis 20 g . . . 0,08 RM
über 20 bis 250 g . . . 0,16 RM
über 250 bis 500 g . . . 0,30 RM
im Fernverkehr bis 20 g . . . 0,12 RM
über 20 bis 250 g . . . . 0,24 RM
über 250 bis 500 g . . . . 0,40 RM
[illegible] bis 20 g . . . 0,25 RM
[illegible] weitere 20 g . . . 0,15 RM

Ungarn u. C.S.R. b. 20 g 0,20 RM
für jede weitere 20 g
nach Ungarn . . . 0,10 RM
nach C S R . . . 0,15 RM
Freistaat Danzig, Litauen, Luxemburg, Oesterreich,
Memelgebiet bis 20 g . . . 0,12 RM
über 20 bis 250 g . . . 0,24 RM
über 250 bis 500 g . . . 0,40 RM

Figure 7. ↗↗ Postal rates on label of *Fafnir*

What is this?

BY BILL JAMES

I purchased this weighing scale from an antique dealer in Northern California. He had no idea as to what it was used for so I am asking the members of ISASC for their help.

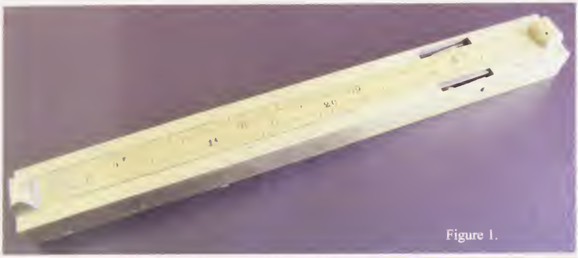


Figure 1.

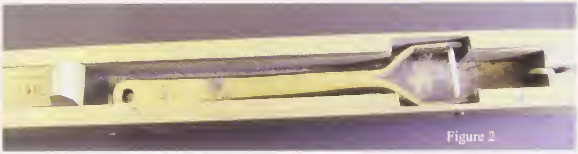
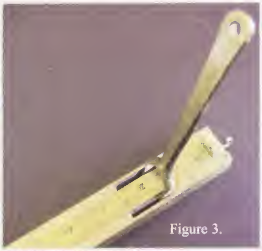


Figure 2



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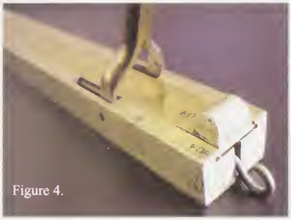


Figure 4.

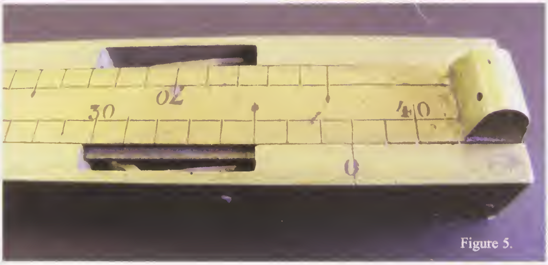


Figure 5.

The scale is an all brass block-like steelyard with a sliding graduated bar that fits into the brass block. (Figure 1) There is a pivot handle to hold the scale and a hook below. The handle and the hook folds into the brass block when not weighing. (Figures 2, 3, 4) The sliding graduated bar has numbers 0 to 40 on one side of the bar and numbers 40 to 75 on the other side of the bar. The units are not identified. It appears to be English, made in the 19th century.

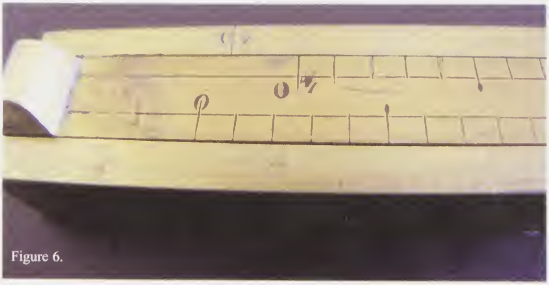


Figure 6.

The scale is $6^{13}/_{16}$ inches long by ¾ inch wide by $^{7}/_{16}$ inch deep.

The pivot point for the handle is $1^{5}/_{16}$ inches from one side of the brass block. The zero fulcrum is located $^{9}/_{16}$ inches from the handle pivot point towards the short end of the brass block. This point measures from 0 to 40 units. (Figures 5, 7)

The 40 unit fulcrum is $4^{5}/_{8}$ inches from the handle pivot point on the

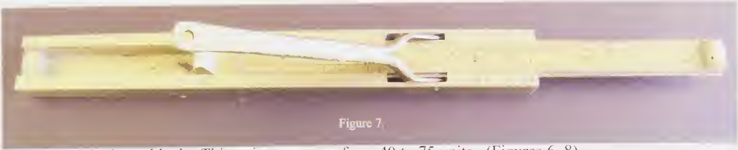


Figure 7.

long end of the brass block. This point measures from 40 to 75 units. (Figures 6, 8)

To make the scale go to equilibrium, an additional 7 oz must be added to the hook. This implies that a clip could be missing.

At the ISASC Denver convention, an idea was purposed that this could be a paper scale reading in pounds per ream.

If you have any thoughts, please contact the editor of EQM.

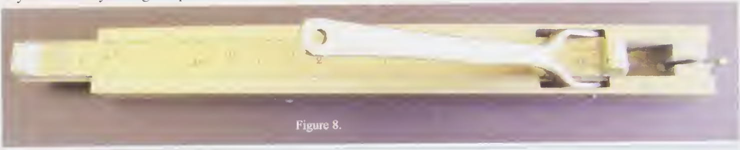
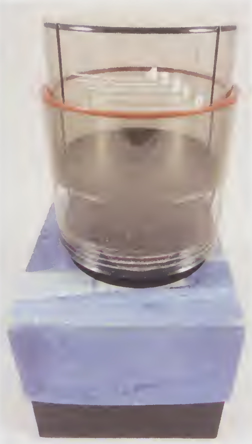


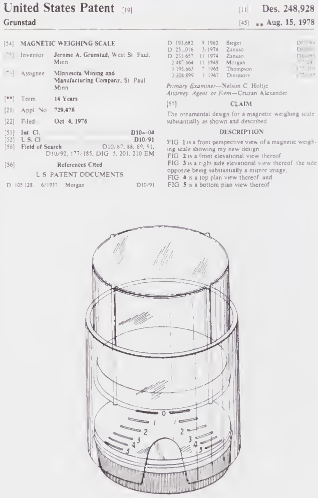
Figure 8.

Showcase



This plastic *Polaris* postal scale uses opposing magnets to weigh up to its capacity of 4 ounces. The adjustable bottom screws up and down to set the scale at zero. It measures 3¼" in diameter, 4⅞" tall and was found with its original label and box.

Kurt Beyreis Collection.



United States Patent [19]
Grunstad

[11] **Des. 248,928**
[45] ** **Aug. 15, 1978**

[54] **MAGNETIC WEIGHING SCALE**

[75] Inventor: **Jerome A. Grunstad**, West St. Paul, Minn.

[73] Assignee: **Minnesota Mining and Manufacturing Company**, St. Paul, Minn.

[**] Term: **14 Years**

[21] Appl. No.: **729,478**

[22] Filed: **Oct. 4, 1976**

[51] **Int. Cl.** **D10—04**
[52] **U.S. Cl.** **D10/91**
[58] **Field of Search** D10/87, 88, 89, 91, D10/92, 177/185, DIG. 5, 201, 210 EM

[56] **References Cited**

U.S. PATENT DOCUMENTS

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D 193,682 9/1962 Bieger [illegible]
D 23[illegible],016 3/1974 Zanuso [illegible]
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Primary Examiner—Nelson C. Holtje
Attorney, Agent or Firm—Cruzan Alexander

[57] **CLAIM**

The ornamental design for a magnetic weighing scale substantially as shown and described.

DESCRIPTION

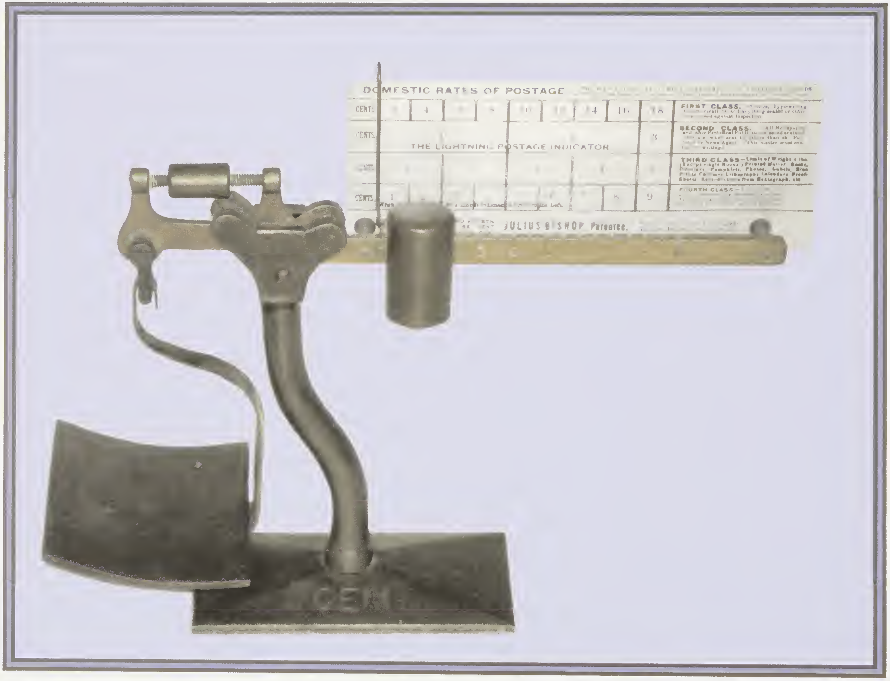
FIG. **1** is a front perspective view of a magnetic weighing scale showing my new design;
FIG. **2** is a front elevational view thereof;
FIG. **3** is a right side elevational view thereof, the side opposite being substantially a mirror image;
FIG. **4** is a top plan view thereof; and
FIG. **5** is a bottom plan view thereof.

ISASC

EQUILIBRIUM

QUARTERLY MAGAZINE OF THE INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

2011 ISSUE NO. 4 PAGES 3741 - 3768



Cover Picture

On our cover is a rare Gem letter scale with a Lightning Postage Indicator attached to its 9 ounce capacity beam. The scale measures 9½" wide, 6¾" tall, the base measures 2¼" by 4 1/16", the beam is 8 1/8" long and the postage indicator measures 2¼" by 5¾". The tiny poise on the left is a pan weight adjustment.

Julius Bittschofsky was issued US Patent number 421026 on February 11, 1890. The patent drawing clearly shows a Howe letter scale with the indicator attached to its beam. "The Lightning Postage Indicator" was marketed for at least 10 years and Bittschofsky had changed his name to Bishop, as shown on our cover, by 1900. To read more about the "Lightning Postage Indicator" see pages 3763-3768 of this issue. Compliments Eric & Judy Soslau

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Photos are best in 300 DPI Jpegs in a separate file with a maximum of 3 photos per Email.

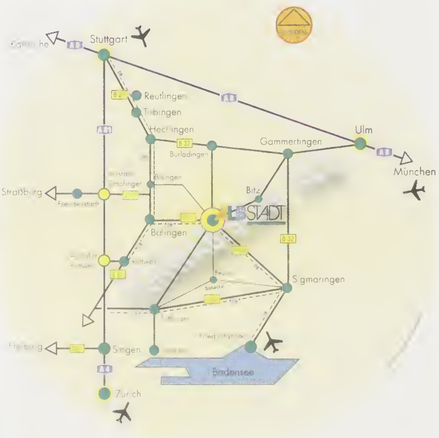
The Scale Industry of the Swabian Alb

BY SUSANNE KIEFER & ERICH ROBENS

This article was written for Mass und Gewicht Issue 95, September 2010. Translation and comments by Utz Schmidt.

Note

When reading the article below, a few of us who traveled in October 2010 to the convention of Mass & Gewicht in Balingen, Germany, will relive the time and fully understand that we visited the *SCALE MECCA*. Without a doubt the area is a *must visit*—see or at least read about it below. Only then you can rightfully use the title: *Scale Collector*. Thanks Susanne and Erich.



Since 1973, Onstmettingen has been a part of Albstadt.

Onstmettingen in 1822.

Introduction

In the mid-20th century a very small geographical area, not even 45 miles from Stuttgart, housed the largest concentration of makers of scales and balances in Germany and the world. In its prime there were 30 companies, employing more than 3,000 people in Onstmettingen and its surroundings, within a radius of just nine miles, producing precision and assay balances for the pharmaceutical and chemical industry and also those used for commerce[1].

Crest of Onstmettingen.

There are still three renowned scale makers left: Mettler-Toledo in Albstadt, and Bizerba and Gottlieb Kern & Sohn in Balingen. And there are three museums, giving witness to the rich past: in Balingen the Museum for Scales and Weights and in Albstadt-Onstmettingen the Philipp-Mathaeus-Hahn-Museum and also the Riedschule with the collections of Jenemann, Danell, Keinath and others.

Table Clock, Onstmettingen.

Start of the Precision Industry on the Swabian Alb

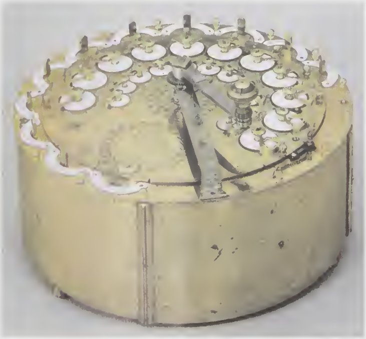
Although quite idyllic to see, the Swabian Alb offers miserable conditions for farming with its poor soil and harsh winters. To make up for their resulting meager income, people did home-labor. By the end of the 17th century, the Black Forest area started producing clocks and, following their example, Onstmettingen probably began shortly afterwards. But their approach was slightly different—they used metal instead of the customary wood of the Black Forest. The manufacturers were blacksmiths by trade and the assembly took place in their formal parlor or, later, in a workroom set up in the barn. Every family member was involved, even if it was only with menial work.

Philipp Matthäus Hahn, Schaudt, Sauter & Co.

The outstanding initiator of the scale industry on the Swabian Alb is without a doubt the Pastor Philipp Matthäus Hahn. He was born on November 11, 1793, in Scharnhausen, Filder, as the son of the local pastor, Gottfried Hahn. The family relocated in 1756 to Onstmettingen because of Gottfried's transfer. Philipp Matthäus, then 17, befriended Philipp Gottfried Schaudt of the same age, the grandson of a schoolmaster in Onstmettingen. Together they began to acquire the theoretical basis of the natural sciences with the help of Christian Wolff's *Elementary Foundation of all Mathematical Sciences*, while additionally experimenting. Schaudt followed in the footsteps of his grandfather and became a schoolmaster in Onstmettingen, where he remained until his death in 1809.

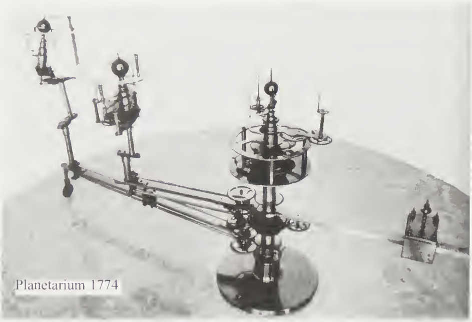
Hahn studied theology from 1756 to 1760 in Tuebingen, and after his magister exam he became tutor and vicar at various locations in Wuerttemberg. During his time as a vicar he continued his natural science studies and then, in 1764, after he started the position as a pastor of Onstmettingen, he and his longtime friend began to implement the dream of their youth: To *feature the celestial structure with a machine*. After trials with small astronomical clocks, in 1768-69 the two of them, with the help of local clock makers, manufactured a big astronomical clock: the so-called *World-Machine from Ludwigsburg*. Once completed and given to the duke Carl Eugen of Wuerttemberg, Hahn's invested money was returned to him. And in recognition of his achievement he was promised the next pastorate of the best endowed church in Wuerttemberg—Echterdingen. Because the position was not vacant at the time, he first became pastor in Kornwestheim in 1770, and then in 1781 he became pastor in Echterdingen.

During his time in Kornwestheim and also in Echterdingen as pastor, he operated mechanical workshops besides his call as a pastor. He manufactured pocket watches, grandfather clocks, large astronomical clocks and calculators. On May 2, 1790, he died in Echterdingen, quite young at the age of 50.



Four Species Calculator

Philipp Matthäus Hahn was a pastor with a wide range of mechanics as a hobby. Outstanding witness of his mechanical knowhow is, aside from big astronomical clocks and pocket watches, the construction of the first fully functional calculator for the four basic arithmetical operations up to 14 decimals. But in perspective, he saw his religious activity as his most important duty as we can take from his note dated August 10, 1773: *Oh I mused today already, with how many unnecessary impediments are you surrounded and did you entangle yourself? It is a thousand times more valuable to preach the gospel, interpret it and to work within it! These calculators, these astronomical machines, they are worldly! But in order to gain fame and honor to enter and spread the gospel, I will continue to carry the load.*



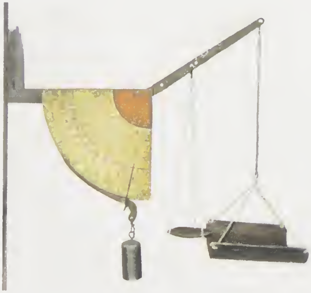
Planetarium 1774

In the field of technical science Phillip Matthäus Hahn limited his activities mostly to concepts and mathematical studies. In Onstmettingen he relied on Schaudt's capabilities to build his mechanical works according to his oral instructions and drawings, which then advised Hahn's workers. Very essential for their success was the fact that they both could rely on a highly specialized group of fine mechanic tradesmen. Without them they would have failed to build the complex astronomical clockworks. There were mainly two brothers of the Sauter family who had taught Schaudt the refined processing of steel and brass. They were Johannes (1723–1786) and Paulus (1732–1799), both deaf and dumb, sons of Matthias Sauter, deceased around 1700, a blacksmith and schoolmaster.

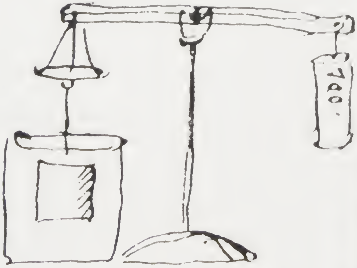
The Scales of Philipp Matthäus Hahn

Philipp Matthäus Hahn did not exclusively work on the pendulum—or quadrant—scale, which he named the *Convenient household scale*, and the hydrostatical balance. We also find in his shop notebook sketches of other scales: a brine scale (shop book II, pg. 162), a quadrant scale with higher accuracy to weigh gold coins (shop book III, pg. 50), a double steelyard (shop book III pg. 56), a more sensitive assay balance (shop book III, pg. 289), a scale with sliding weight with three ranges (shop book IV, pg. 28r), and a more sensitive beam-scale with sliding weight (shop book IV, pg 38v)[2-3]. In addition he left in his shop books explicit instructions for the adjustment of scales.

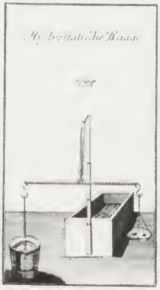
In a letter to Jeremias David and Christian Friedrich Reuss from September 4, 1767, he settles the account for a wooden quadrant scale and describes it as well. He writes that his brother in Ostdorf would make it: ... *because you let me know through the man who goes to Tuebingen that you desire one of these scales like the one I made for the administrator in Balingen. So I passed it on to my brother the barber in Ostdorf, because I don't have the time for those things. He then will make one of this kind very accurately. ...*



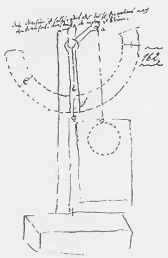
Convenient Household Scale. Pendulum Scale.



Hydrostatic Scale, Sketch from Philipp Mathaeus Hahn 1774/84



Hydrostatic Scale Drawing



In the *Kurzen Erzaehlung*[4] (Short Narration) from 1774, he writes about building scales: *My brothers, who are barbers by profession, came home since then and attested desire to craft such curious work. I therefore gave them the task to perfect a newly-invented type of scale and a sun dial, which I invented a year ago.*

Furthermore in an article from and to Philip Matthäus Hahn of the *Swabian Magazine of learned things in the year 1777*[5] can be read: *...Henceforth there have been fabricated the following works of art, partly by the schoolmaster from Onstmettingen and partly by his brothers and other workers under his instructions:*

...

3.) Household scales of a new kind

4.) Hydrostatic balances ...

The Boom Time of the Scale Industry on the Swabian Alb

It can be assumed that the contact between Philipp Mattaeus Hahn and Onstmettingen continued even though he moved to Kornwestheim and later on to Echterdingen. So it is most likely that most of all Philipp Gottfried Schaudt, but also the blacksmiths and clockmakers of the Sauter and Keinath families, stayed current of Hahn's scale developments. Nevertheless there are no reports on scale activities of any kind in Onstmettingen and the surrounding area for the time when Hahn left in 1770 until 1831. Even extensive research could not close the big information gap, even when including the time of Hahn's death in 1790 up to the first mentioning of scale fabrication by 1831 in Ebingen. Then in the 1830s, the reports pertaining to scales get more and more frequent in newspapers and catalogs of trade exhibits.

It can be concluded that Hahn's presence in Onstmettingen and his quadrant scale were not the reason for the local scale industry but it lead to an increase of mechanical activities there during the first part of the 19th century. The base was rather the traditional presence of weapon smiths and small forges for steel and brass and there mainly the Sauter family, and later also other mechanics, making clocks. Hahn stimulated their skills with his constructions, which they in turn transformed into products, showing their capabilities along the way. The actual start of the regional production of scales is owed to those who had recognized that their home production for clocks already lagged a step behind the Black Forest, where it was industrialized by that time. In today's language, they saw the market opportunity, which later on, as part of the early industrialization to a growth of the economy with an expansion of the scale industry in Onstmettingen and neighboring areas in the Swabian Alb[6].

Recognizing the success of one's travels abroad to expand one's knowledge and know-how, and gaining new ideas were recognized by the clockmakers and mechanics of the Swabian Alb, as can be read in local documentation, which almost stresses the point. August Sauter reports that the mechanics from Onstmettingen went on travels, above all to Christian Ferdinand Oechsle in Pforzheim, who was at the beginning of the 19th century the leading maker for physical [scientific] instruments in Baden Wuerttemberg. Sources in Ebingen's town archives indicate that August Sauter traveled as far as Vienna and London where renowned mechanical shops existed. From there the mechanics brought back home what they had learned, including their recognition that there was no future in clock making but rather in a market in need of physical instruments for the growing exact science—mainly for chemistry.

Prof. Dr. F. C. Huber writes in 1910 the following description of the status of scale making in and around Onstmettingen at the start of the 20th century for the celebration of the 50th anniversary of the Chamber of Commerce in Wuerttemberg: Six companies for precision balances in Onstmettingen, four in Ebingen and two in Jungingen. They employed 500 workers, 300 in shops and 200 doing work out of their homes. The shops outsourced to numerous suppliers for turning horn, brass-foundry work, metal pressing, and also for finished carpentry. Huber lists a year's production with about 50,000 scales and one million weights. As a result, the offices of Weights and Measures in Ebingen and Onstmettingen calibrated about 80% of all precision balances and weights used in the German Empire. Even in those days they had already specialized in counter scales.

Onstmettingen, Ebingen and Jungingen formed the center of precision balance makers in Southern Germany at the beginning of the 20th century. The town fathers of Onstmettingen felt obliged to thank Pastor Hahn, the founder of their industry—they erected a monument of him in 1897.

As it progressed, the 20th century brought crises. At the beginning of the century, the price increase of brass and undercutting prices brought the first big downfall of the scale industry in and around Onstmettingen. WWI brought relief but it was annihilated by the depression. National Socialism and WWII brought contracts from the armament industry and so also for the precision scale industry. Dismantling after WWII weakened the companies with the addition of technical innovations after 1945, most importantly Mettler's substitution scale, made the precision balance industry from Onstmettingen, Ebingen and Jungingen struggle to catch up with the technological progress till the 60s.

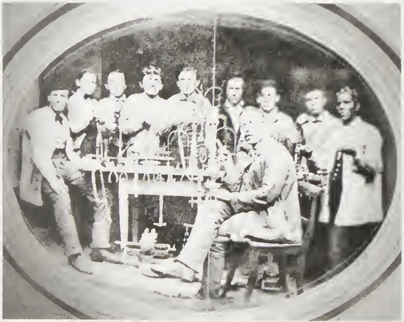
Today's Scale Industry on the Swabian Alb

In today's market three of the many precision balance companies in and around Onstmettingen still compete successfully: Gottlieb Kern & Sohn, for 166 years in possession of the family, August Sauter, now part of Mettler-Toledo in Albstadt, and Gottlob Haigis for weights in Onstmettingen. Also Bizerba, in Balingen, celebrates 142 years of existence.

Gottlieb Kern & Sohn

Gottlieb Kern & Sohn is the oldest precision balance company in Europe. The foundation announcement from mechanic Gottlieb Kern of Onstmettingen was published in the *Albbote* from May 21, 1844: *The signer decided to establish himself here and recommends himself to the honorable public for all pleasing commissions relevant for his business, especially those for manufacturing of physical instruments and engraving labor, also making and maintaining clocks, assuring solid execution of the work and low prices.*

There is no special mentioning of scales, but they were part of the wide range of scientific instruments. This changed when Gottlieb Kern married Auguste in November 1846, the widow from the recently deceased Philipp Matthäus Sauter, and took over the flourishing shop. The still existing books of Gottlieb Kern's business give account for 1840s deliveries of scales and thermometers to Luzern, Augsburg, Sigmaringen, Frankfurt/Main and Muenster/Westfalen. The books then show for the 1850s a major increase of the company. Already in 1846 he did an export to Cairo and was in 1861 successful at the trade exhibit in Rottweil. Not trusting the regional market, which wouldn't have been smart in his business, he sent products to the world exhibits: 1862 in London, 1867 in Paris, 1873 in Vienna, and 1900 in Paris where he received a gold medal. And thus he made Onstmettingen famous all over the world.

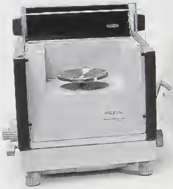


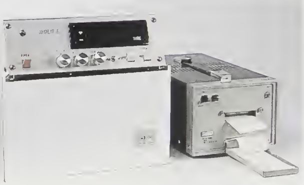
Shop of Gottleib Kern in 1863.

The initial small shop grew steadily, as we can conclude from the multiple moves to larger facilities. Its equipment was updated and modernized as well, and Albert Sauter, Gottlieb Kern's stepson, continuously increased the mechanization. In 1870, Albert Sauter became partner and the company name was changed to Gottlieb Kern & Sohn. With the opening of the railroad route from Balingen via Ebingen to Sigmaringen in 1878, the headquarters were moved to Ebingen.

Meanwhile Kern & Son, now with 22 employees and yearly sales of 24,000 Gulden, had grown into one of the largest manufacturers of precision balances. In 1885-86 a new factory building was erected in Ebingen, close to the railroad tracks. The steady growth continued till the 20th century. Gustav Sauter, the son of Albert Sauter, took over the reins in 1903. Beginning in 1910 there was a surplus of scales and the prices dropped immensely as a consequence. So the production was reduced in 1915 to three days a week. Two dramatic events changed the company forever: On July 11, 1944, Paul and Walter Sauter lost their lives during a bombing raid on Ebingen. They had succeeded Gustav Sauter in managing the company. A second crisis followed—dismantling the best machinery as part of the war reparations. But Kern & Son continued production in the post-war time, initially with tools for plastering.

Kern Scale




Kern Electronic Scales

Martin Sauter developed in 1963 the center-pan-balance and added another milestone to the history of Kern & Son. The company actively followed the steps into the electronic age and came out in 1973 with an electronic version of the center-pan-balance with a resolution of 1mg at a load of 160 g. The last mechanical assay balances of type S2000 were discontinued in 1990, which was the end of mechanical scales for Kern & Sohn, the company with the longest tradition in scale making in the Zollern-Alb region. The importance of the company is definitely based on the 166 years of continuous family history. But even more so is the fact that its founder, Gottlieb Kern, laid the seed for a series of quite important scale manufacturers.

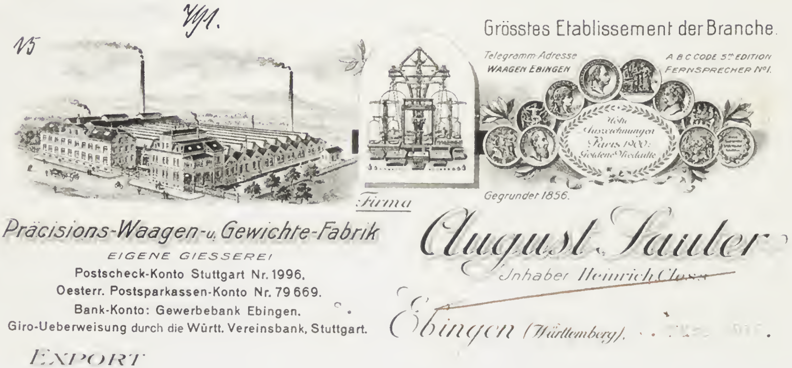
From August Sauter to Mettler Toledo

August Sauter, born on November 15, 1831, learned his trade in Onstmettingen. His journey years he spent in Vienna and London and in these cities bought the basic tools for his future shop, which he opened 1856 in Ebingen (today's Albstadt-Ebingen).

He thought like Gottlieb Kern and recognized the importance of trade shows for doing business successfully. In 1861 he exhibited in Rottweil and the catalog mentions his praiseworthy, well known shop and his exports, mainly to England. And that's where it drew him in 1862: He was very successful at London's Industrial Exhibit and even got a medal for his scales. In 1871 August Sauter became master sealer in Ebingen. In 1873, during the World Exhibition in Vienna, he got a silver medal and a recognition diploma. In 1876 the World Exhibition in Paris followed with further success—he even obtained a bronze medal.

The successful rise took a sudden end when August died with only a minor heir in 1874; he was just 42 years old. The small but fine and successful business was sold to Louis Armbruster, who had learned the trade from August Sauter. Armbruster increased the product variety and in 1888 laid the foundation-stone for a new, larger factory building. He was also the successor of August Sauter as the master-sealer and held the position until 1893. Under his guidance the company received a gold medal at the 1900 World Exhibition in Paris. Meanwhile, in Ebingen, Louis Armbruster employed 21 workers aside from mechanics, an upholsterer, and a finished carpenter. In addition he employed eight to ten home-workers, mostly in Onstmettingen, Bitz and Jungingen, who manufactured beams, simple household scales, hangers, and tweezers. They also did fine adjustment for fractional gram and rider weights. He ran the business under *August Sauter, owner Louis Armbruster*.

1915 Letterhead from August Sauter.



1620

15

Grösstes Etablissement der Branche.

Telegramm-Adresse
WAAGEN EBINGEN

A B C CODE 5th EDITION
FERNSPRECHER No 1.

Höchste Auszeichnungen Paris 1900: Goldene Medaille

Gegrunder 1856.

Firma

Präcisions-Waagen-u. Gewichte-Fabrik
EIGENE GIESSEREI
Postscheck-Konto Stuttgart Nr. 1996.
Oesterr. Postsparkassen-Konto Nr. 79 669.
Bank-Konto: Gewerbebank Ebingen.
Giro-Ueberweisung durch die Württ. Vereinsbank, Stuttgart.

August Sauter
Inhaber ~~Heinrich Cless~~

Ebingen (Württemberg).

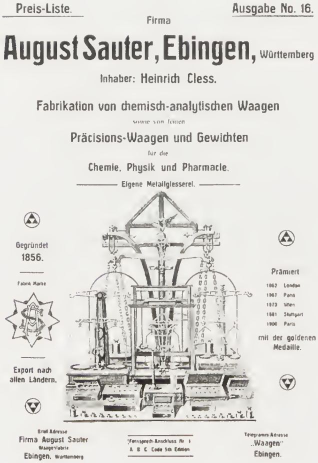
EXPORT

Armbruster died in 1903 without an heir; so the small business was passed on to Heinrich Cless. Cless then developed the small mechanical shop into a big business with industrial production. The 1916 letterhead pictures the large factory building.

The price list tells the story of all the medals attained. He installed his own forge and added other departments with their own foreman, a fine mechanical shop with machine hall, a seal department, a foundry, nickel plating, painting, finished carpentry, packaging, and warehouses for raw materials and finished products. The machinery was and remained always the latest up-to-date version in and around Ebingen. The workforce increased rapidly as well. When Cless took over there were no more than 20 workers, by 1908 there were already 60, and in 1913 it jumped to 200 workers, 4 technicians, plus 8 in the commercial sector. Export played an important role for August Sauter owner Heinrich Cless, with 1913 locations in Paris, New York, St. Petersburg, Odessa, Sofia, Brussels, London, Vienna, Milano, Madrid and China, where he even had an agency.

Two primary elements paved way for the company's success. Heinrich Cless had the motto: *We produce whatever the customer wants us to make.* And, additionally, there was in 1928 the new development from Armin Wirth, the fully automatic pendulum scale with a 5-revolution pointer. This revolutionizing new construction led to the fast growth of the company, and the production

Price List from August Sauter.



Preis-Liste. Ausgabe No. 16.

Firma

August Sauter, Ebingen, Württemberg

Inhaber: Heinrich Cless.

Fabrikation von chemisch-analytischen Waagen
sowie von feinen
Präcisions-Waagen und Gewichten
für die
Chemie, Physik und Pharmacie.

Eigene Metallgiesserei.

Gegründet
1856.

Fabrik Marke

Export nach
allen Ländern.

Prämiert
1862 London
1867 Paris
1873 Wien
1881 Stuttgart
1900 Paris
mit der goldenen Medaille.

Brief Adresse
Firma August Sauter
Waagenfabrik
Ebingen, Württemberg

Fernsprech-Anschluss Nr. 1
A B C Code 5th Edition

Telegramm Adresse
„Waagen"
Ebingen.

of the 150,000th dial face head was celebrated in 1974. Heinrich Cless died in 1943; his only son, Oscar Cless, took over the reins of the business.

Weighing technology was revolutionized in 1945, not noticed by the manufacturers of scales in Ebingen. Dr. Erhard Mettler in Kuesnacht, Switzerland, had developed the substitution balance as a replacement for the analytical balance with two pans. Finally at the beginning of the 60s the August Sauter KG caught up with the competition when they introduced the top-loading balance Toppan-S and -M.

Mettler substitution scale.

For production of his invention, Dr. Mettler founded, in 1945, a company carrying his name. In 1971 the August Sauter KG was sold to Mettler and then all the Mettler-owned companies changed their names to Mettler Toledo in 1990, thereby changing Sauter into Mettler-Toledo (Albstadt) GmbH, a subsidiary of the Mettler-Toledo Group with main offices in Greifensce (Switzerland) and Columbus, Ohio (USA). Mettler Toledo is the industry leader of weighing systems and complementary technologies for lab, industry and trade.

Sauter fully automatic scale.

Sauter single pan

With more than 8,000 employees, Mettler Toledo's sales amount to over one billion dollars annually. Mettler-Toledo Interna-tional Inc. is owned by the AEA Investors Inc. of New York and traded on the New York Stock Exchange. In 1989 Mettler joined forces with the Toledo Scale Co., the largest US manufacturer of industrial scales, headquartered in Columbus, Ohio. It was founded in 1901 by Henry Theobald to produce a just-invented scale, which indicated weight and price simultaneously. The company was named Toledo Computing Scale and Cash Register Company. Mettler Toledo Albstadt is the global concept center for marketing, development and production of weighing technologies with complete hardware and software system solutions for industry and trade.

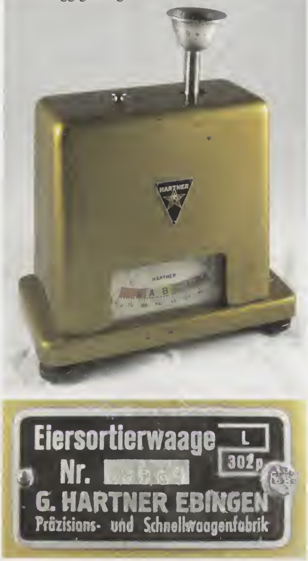
Gustav Hartner

Gustav Hartner was born on November 22, 1853. At just 40 years old, on December 5, 1893, he bought from the mechanic Ferdinand Rehfuss *the Property at the Kirchgraben 430...* The records from the town of Ebingen continue: *...including the business, his customers, warehouse and stock... also all models, which are part of the business and the commercial books, all the finished goods in and outside the building, stored wood,* *altogether all the items contained at this time in the house, with the exception of private inventory of Mr. Rehfuss for the price of M 37,000 spelled out Mark thirty-seven-thousand.*

Ferdinand Rehfuss had already founded his shop in 1879 for the production of scales. At the 1881 Stuttgart trade show, he displayed an analytical balance, two big counter scales, several fine scales out of nickel silver, letter scales, and weights. At that point he had four employees, and his market already included exports to foreign countries, a sector which he expanded continuously. Those included Northern Europe, Russia, USA, Canada, South America and the Far East.

The successful business created the need for a larger space for production. The small shop was replaced in 1905 with a four-story, new factory building. Precision balances remained the main product, but at the beginning of the 20th century twist drills were added. For the sole production of twist drills, Gustav Hartner built in 1911, outside of Ebingen, a factory with its own machining department. It developed, designed and built the needed specialty machinery for mass production of twist drills. After reorganizing the company in 1913, the company was renamed into *Gustav Hartner, Waagen und Spiralbohrerfabrik*. In 1928 a branch was also opened in Saulgau for the sole production of twist drills. Making scales was very successfully continued in Ebingen, and this led to the development of a new series for the industry, an instant-read scale and heavy scales with a capacity up to 3,000 kg (6,600 pounds).

Hartner egg grading scale.



In 1945, shortly before the end of WWII, the scale factory was totally destroyed. Gustav Hartner died in the same year at the advanced age of 92 on September 1, 1945. After the reconstruction, the production shifted more to twist drills, but the development of scales still remained successful, for example the fully automatic optical price computing scale. Today the company builds exclusively precision boring tools. Their standard program comprises over 10,000 products for various applications, including the interchangeable boring system, Multiplex, and the tungsten carbide drill.

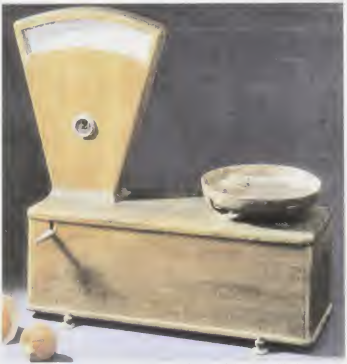
Bizerba

The founder of the company, Andreas Bizer, was born on September 2, 1839, in Tailfingen. He came to Balingen at the end of 1867 to build a "wagon scale" for the town. During his half-year stay in town, Andreas met Elisabetha Wagner and fell in love. He became a citizen of Balingen and married his sweetheart.

Before his time in Balingen, Andreas Bizer had already engaged in building scales. So on November 7, 1868, he started his own business with the following entry in the commerce-register: *A. Bizer, Fabrication of wagon scales, countertop- and beam-balances; proprietor of the company: mechanic Andres Bizer.*

Right away from the start, business went well. Shortly after in 1871, he also became master sealer of Balingen. Then starting in 1882, he continuously enlarged the shop and modernized the equipment. His three horsepower steam engine, the first in town, was just the beginning. In 1896 he moved the shop into a different building, which was expediently rebuilt. In 1922, House No. 598 consisted of the main building with two large and four small additions. .

During the next 56 years, the company founded by Andreas Bizer grew from a shop into a modern entity.



Bizerba pendulum scale with captive weights. Wilhelm Kraut development, 1925 patent.

Originally small, it was now a factory that kept up with the progressing industrialization and held its ground in the market. When Bizer sold it in 1906 to his son-in-law Wilhelm Kraut for 25,474.25 Gold-Mark, it had eight employees who made mainly counter scales sold mostly to Switzerland. The company name "A. Bizer" continued with an addition to the name "proprietor Wilhelm Kraut," according to the books of the commercial court.

In February 1907, Wilhelm Kraut patented a tabletop decimal scale with sliding weight. At the same time he started to modernize Bizer's shop, essentially the installation of electricity. The breakthrough for the company came in 1924. Wilhelm Kraut had developed a pendulum scale with captive weights. This scale showed the final weight and added, with the turn of a lever, additional weights up to 5 kg, which made handling of loose weights obsolete. This type of scale could not be certified in the German Empire until 1921 because it worked without placing weights. When this restriction fell, Wilhelm Kraut grabbed the opportunity, and the 1925 patented pendulum scale with captive weights entered the market with the Bizerba name, which was later used as the company's name and kept until today—as can be seen on modern scales.

The Bizerba scale, of the company with the same name, brought the breakthrough and world fame. On a special insert of the company to the Swabian Merkur it reads: *The products of the company are known worldwide for their superior quality. Bizerba scales are now essential for the trade... The quick way scales fill the gap, which was felt for a long time.* The company A. Bizer, proprietor Wilhelm Kraut had reached, with 400 employees in 1928, the status of the largest scale manufacturer in the German Empire.

A further milestone in the company's history became the first optical price computing scale in the world—model Bizerba-OP. A hundred thousand of these scales were produced and sold worldwide. In 1965 there followed the first electronic retail scale, and in 1981 Bizerba brought the first self-service scale to the market and in the same year the first fully electronic retail scale.

Bizerba operates worldwide today and is the market leader in numerous fields of technology for professional system solutions for related weighing, information, communication, and foodservice technologies. The plant in Messkirch produces slicers and meat processing machinery. The plant in Bochum produces paper and labels, and the Asian market is supplied from a plant in Shanghai.

The Scale Museums of the Swabian Alb

Museum fuer Wage und Gewicht Balingen

The museum owes its existence to Prof. Wilhelm Kraut's (1875-1957) passion to collect. As a start in 1943, he gave his private collection on loan to the Museum für Wage und Gewicht. The display of about 450 items shows almost the complete development steps of scales as a manifold measuring element, from the simple beam scale up to the intelligent price computing scale and highly sensitive electronic scales of the present.

Philipp Matthäus-Hahn-Museum Onstmettingen

The intent of this local museum is to honor Philipp Matthäus Hahn, a pastor of Onstmettingen. At the same time, he was astronomer, engineer and entrepreneur. He was pietistic and author of important theological papers (Bible translation, sermon books) and he saw himself as a *Prophet of the upcoming kingdom of Jesus Christ.*

Sammlung Riedschule Onstmettingen

The huge scale collection of the Förderverein Philipp-Matthäus-Hahn-Museum, a group of people promoting the museum for the pastor Hahn, is housed in a former school, the Riedschule. It comprises various collections and foremost those from ISASC members Hans Jenemann and Max Danell. There are over 1,000 scales on display from about 50 manufacturers.

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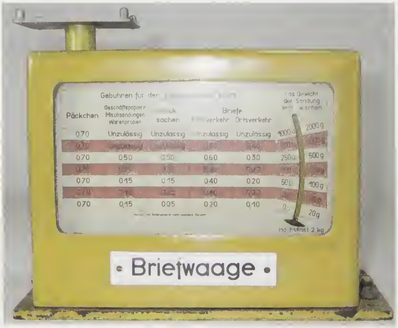
Authors' Biography

Susanne Kiefer, M.A.; born March 3, 1967; studied history and politics at the university in Konstanz. Since 1993 engaged in historical research of precision scale making in the area of Onstmettingen; from 2002 to 2009 head of the *Philipp Matthäus Hahn Museum* in Albstadt Onstmettingen.

Erich Robens, born May 13, 1924; engineer, hon. Prof. of the Maria-Curie-Sklodowska-University, Lublin. Previously, scientific and technical associate of the Battelle-Institut, Frankfurt/Main and of the Johannes-Gutenberg-University, Mainz.

Showcase

This German postal scale features rates for small packages (Päckchen), business papers, mixed consignments samples ware, printed matter (Drucksachen), long distance and local letters (Briefe). The chart is entitled Gebühren fur den inlandsverkehr in DM (charges for domestic services in Deutsche Mark). It weighs from 20 grams to 2000 grams and has a 2 kilogram capacity. Its mechanism is quite interesting, being composed of several rolling-pin style counter poises which are lifted one at a time to reach equilibrium. Manufactured of painted steel and cast iron, it measures 13 inches long, 7 inches deep and is 11 inches tall. The porcelain sign affixed to the front reads Briefwaage (Letter Scale).



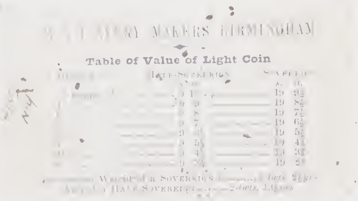
Private Collection.

Weighing at the Banks 2: The Golden Age of the Sovereign

BY NORMAN BIGGS

The beginning of the Victorian era

Sovereigns and half-sovereigns were minted in large numbers in the 1820s and 1830s. The Mint was required to produce sovereigns at an average weight of 123.274 grains, and in 1821 the Least Current Weight (LCW) had been set at 122.5 grains. The law presumed that anyone who was offered a sovereign weighing less than the LCW would deface it and return it to the owner, who would then have to sell it at its bullion value.



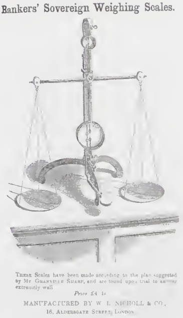
AVERY MAKERS BIRMINGHAM

Table of Value of Light Coin

Figure 1. Card showing value of light coin, issued with Avery's scales, c.1842 3.

In 1835 the Mint carried out experiments which showed that an average sovereign would be reduced to the LCW after about 20 years in circulation. The legal presumption had not worked in practice, because sellers were frequently reluctant to risk the loss of a sale, and so by the time that Victoria became Queen in 1837, light coins were common. A proclamation issued in 1842 reminded the public that coins below the LCW were not legal tender, and that they should be withdrawn. The government agreed to offset the loss to holders of light sovereigns by paying for the coins at full Mint bullion rate, without the usual allowances. The 'improved' rates were listed, for example, in a table of values that accompanied Avery's coin scales at the time (Figure 1). However, the major part of the loss still fell on the owners of light sovereigns.[1]

Figure 2. Nicholl's scales for bankers, 1854.



Bankers' Sovereign Weighing Scales.

These Scales have been made according to the plan suggested by Mr Granville Sharp, and are found upon trial to answer extremely well

Price £4 1s

MANUFACTURED BY W. L. NICHOLL & CO.,
16, Aldersgate Street, London

The 1842 proclamation was successful in bringing in large numbers of light coins, and the part played by the banks in this operation is mentioned by Granville Sharp in his *Prize Essay on Practical Banking.*[2] By the time this was published (1854) he could write that *the excitement resulting from the proclamation of 1842 has long since subsided* and *bankers generally have been glad to put aside all their small gold weighing scales.* He remarked that the public now treated any sovereign as being worth 20s, and went on to point out that, in practice, when banks sent gold to the Bank of England, it was the good coins that were selected. This was because the Bank of England was the only place where the gold coins were checked individually. Sharp observed that the consequence was that the banks returned light coins to circulation, and clearly … *the practice of bankers weighing sovereigns and, when found to be light, giving them back to their customers, is evidently injurious …* .

Sharp also described in detail some of the scales used for weighing gold and silver coins in the banks at that time. They included an early Beranger type scale (made in England by Pooleys) and a more conventional tripod-type beamscale made by Nicholl and Co. (Figure 2).

Weighing sovereigns in batches

The evidence suggests that weights for checking batches of sovereigns were being used extensively in the 1850s. For example, in 1859 a deputation from the Decimal Association[3] visited Benjamin Disraeli, then the Chancellor of the Exchequer. They told him that there were many different systems of weights currently in use, one of which was the system of *bankers weights to weigh 10, 20, 30, 50, 100, 200 sovereigns*. Weights

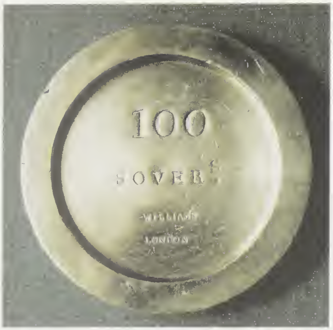


Figure 3 A 100 sovereign weight made by Thomas Williams.

that answer this general description are familiar to collectors. They are flat, round weights, made of brass, with the denomination and (sometimes) the maker's name stamped on them. Among those that may have been used in the 1850s are some made by Thomas Williams which have the distinctive abbreviation SOVER^{s} (Figure 3).

More information can be gleaned from the writings[4] of the economist W. S. Jevons, although he is not entirely clear in some respects. He confirms Granville Sharp's assertions about the prevalence of light sovereigns, and writes of weights equivalent to 5, 10, 20, 30, 50, 100, 200 and 300 sovereigns used for counting purposes (in fact, both smaller and larger denominations are occasionally found). Unfortunately, he fails to distinguish between the counting procedures used for paying out and paying in. Suppose the bank has to pay out a sum in gold (say £100) to a customer. The bank must ensure that there are not more than 100 sovereigns, while the customer must ensure that there are not less than 100. As Sharp and Jevons tell us, neither party is concerned with the weight of the coins, and indeed the aim of ensuring exactly that 100 sovereigns are counted out can be achieved by a procedure that does not involve the use of weights. This method of duplication was described by Jevons himself, but without fully explaining its relevance. 25 sovereigns would be counted into one pan of the bank's scales, and sovereigns placed in the other pan until a balance was achieved. The variation in weight of individual coins was relatively small, so that 24 or 26 coins could never balance 25. The process would then be repeated with the 50 coins so obtained, and the required 100 obtained. As we shall see, an official report in 1886 confirmed that this method was commonly used by the banks. The inevitable conclusion is that the multiple-sovereign weights were intended for counting the coins *received*.

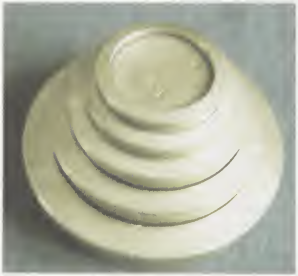


Figure 4. Stack of anonymous weights, 5,10,20,30,50 sovereigns.

Attempts to regulate bank weights

By the 1880s several firms were producing stacks of sovereign weights like the one shown in Figure 4. Many of these weights were anonymous, but five names appear quite frequently: Avery, De Grave, Doyle, Vandome, and Williams. A few others are also known.[5] Some of these makers changed the style of their name on several occasions, and this can be a help in dating the weights. For example, Vandome used the styles R. VANDOME and VANDOME & Co. until about 1866, after which the name was VANDOME TITFORDS' & PAWSON.

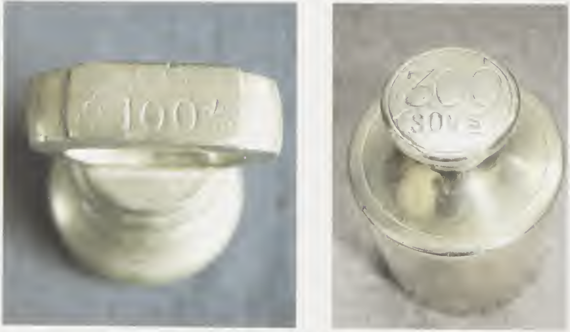


Figure 5. A bell weight for 100 sovereigns and a cylindrical weight for 300 sovereigns.

Sovereign weights were also made in 'upright' styles. Avery's 1885 catalogue[6] listed bell weights, cylindrical weights, and spherical weights in denominations from ½ to 1000 sovereigns. All these are scarce, although anonymous bell weights and cylindrical weights turn up occasionally (Figure 5).

Legally, multiple-sovereign weights were not for use in trade, and consequently they were not subject to verification by the inspectors of weights and measures. However, in 1886 the Standards Department of the Board of Trade decided to consider whether it should provide official standards for bankers' weights, and a detailed investigation was carried out.[7] Unsurprisingly, the first point to emerge was that samples of 100 sovereigns taken from circulation at a number of London banks varied between 12232 grains and 12257 grains. This confirmed that most of the sovereigns in circulation were below the least current weight of 122.5 grains. On the other hand, it was found that, in practice, an unofficial 'standard' of 12287 grains for the 100 sovereign weight was used by the scale makers who adjusted weights for use in the banks. Almost certainly 100 sovereigns from circulation would weigh less than this, so 101 sovereigns would be needed to turn the scales against the 'standard' weight. The justification from the banks' viewpoint was that they had to make sure they received full value for the gold they sent to the Bank of England. If they had relied on the LCW, and used a standard of 12250 grains, then a typical batch of 100 sovereigns could have contained about 50 coins above the LCW and 50 below it. At the Bank, the 50 heavy coins would be rated at 20s each, but the 50 light ones would be picked out and rated as bullion. Consequently the batch would yield less than £100. In fact the Bank of England was keenly aware of the niceties regarding the mass of sovereigns. Its official history[8] mentions a quotation from 1892 saying that the Bank itself provided sovereigns that 'were slightly worn, though not legally light, a thousand of which might weigh only 998 new ones'.

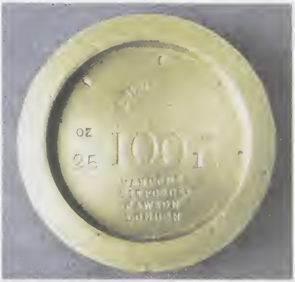


Figure 6. A 100 sovereign weight with unofficial standard value, before 1895.

Contemporary accounts[9] differ slightly as to the exact value of the unofficial standard. The most likely figure was 12288 grains, which is exactly 25 oz 12 dwt troy, and this value is clearly stamped on some 100 sovereign weights (Figure 6). Unfortunately the proportional figures for the weights of 30 sovereigns and below are not so exact, and the values shown on the weights themselves were rough approximations.

In 1889 and 1891 the government finally devised a method that would allow light sovereigns to be weeded out without loss to the holders.[10] Following this change, the banks adopted a new unofficial standard of 12300 grains (25 oz 12½ dwt) for the 100 sovereign weight.[11] This value had the additional advantage that the proportional values from 100 down to 10 sovereigns worked out exactly in quarter-pennyweights, as in the following table.

MULTIPLE	100	50	30	20	10	5
12288 grain standard before c1895						
	oz-dwt-gr	oz-dwt-gr	oz-dwt-gr	oz-dwt-gr	oz-dwt-gr	oz-dwt-gr
Exact proportion	25- 12- 0	12- 16- 0	7- 13- 14.4	5- 2- 9.6	2- 11- 4.8	1- 5- 14.4
As on the weights	25 12	12 16	7 13½	5 2½	2 11¼	1 5½
12300 grain standard after c1895						
Exact proportion	25- 12- 12	12- 16- 6	7- 13- 18	5- 2- 12	2- 11- 6	1- 5- 15
As on the weights	25 12½	12 16¼	7 13¾	5 2½	2 11¼	1 5½

It will be seen that only for the weights of 30, 50, and 100 sovereigns is it possible to distinguish between the old standard and the new one by the value stamped on the weight. An interesting item, shown in Figure 7, is a 30 sovereign weight on which the new standard value has been stamped over the old one.

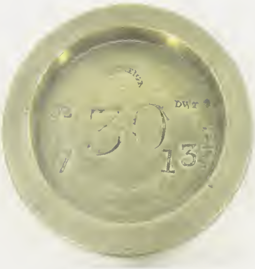


Figure 7. A 30 sovereign weight showing the two unofficial standards.

The end of gold currency

The mechanism for the withdrawal of light gold that began in the 1890s was successful, and in the reign of Edward VII (1901-10) the British gold coinage attained a remarkable level of integrity. But it was not to last. The outbreak of war in 1914 led to urgent financial measures, including the issue by the Treasury of notes for £1 known as *Bradburys*. The notes were very popular, and were mainly responsible for the fact that the payments in gold coin soon came to a stop, albeit unofficially. The disappearance of the sovereign from circulation, originally thought to be temporary, was in fact permanent.[12] Multiple sovereign weights were still listed for sale in the early 1920s, but henceforth the British banks only weighed coins made of silver. That will be the subject of the third part of this article.

Notes and References

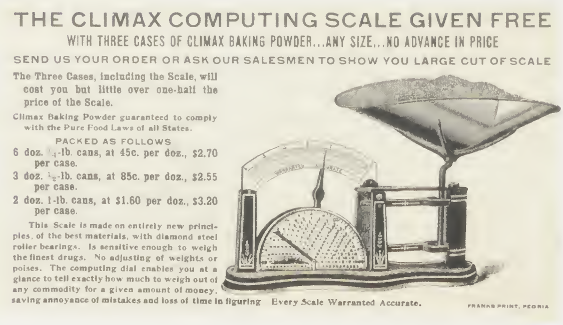
1. The Mint was required to make 934½ sovereigns out of 20 pounds troy of gold. Thus the full Mint price was 934½ pence per ounce troy. Previously the Bank had offered only 930 pence per ounce, to allow for overheads. For a sovereign weighing 122 grains (half a grain below the LCW) the corresponding values were 19s 9½d, as shown in Figure 1, and 19s 8½d. This meant that the Treasury lost one penny and the bearer lost 2½ pence.
2. G. Sharp, *Practical Banking - The Gilbart Prize Essay*. London: Groombridge, 1854.
3. [Decimal Association.] *Memorial on Decimal Weights*. London: Bell & Daldy, 1859
4. W.S. Jevons. *Money and the Mechanism of Exchange*. London: H.S. King, 1876. See especially pages 107, 111, 161-2.
5. The names of Parnall (a Bristol maker) and Waterlow (a London supplier of office equipment) have been reliably recorded. It was not the practice for the banks to put their names on the weights. Weights with unusual names, shapes, and denominations should be viewed cautiously, since they may be have been produced quite recently.
6. W & T. Avery. [*General Catalogue, Fourth Edition*]. Birmingham, 1885.
7. Board of Trade. *Report on Proceedings and Business under the Weights and Measures Act 1878*. London: Hansard, 1886 (Appendix 13).
8. John Clapham. *The Bank of England, Volume II 1797-1914*. Cambridge: University Press, 1944. See p.348.
9. W.S.B. Woolhouse (*Measures, Weights and Moneys of All Nations*, London; Crosby Lockwood, 1890) repeats the figure of 12287 grains, but Chaney (see note 11) says it was 12289 grains.
10. C.E. Challis (ed.). *A New History of the Royal Mint*. Cambridge: University Press, 1992. See p.530.
11. H.J. Chaney. *Our Weights and Measures*. London: Eyre & Spottiswoode, 1897.
12. Glyn Davies. *A History of Money*. Cardiff University of Wales 1994. See p.370.

Old Advert

This trade card was an offer for merchants to receive a free scale with the purchase of three cases of Climax Baking Powder. Dating from circa 1900, the card shows a detailed cut of a *Climax Computing Scale*, which is actually a Gillfillan scale based on US Patent number 642321 issued on January 30, 1900.

More information on the scale, the patentee and the Patent may be found in EQM pages 3657-3658 and 3672-3684.

Jerry Katz Collection.



THE CLIMAX COMPUTING SCALE GIVEN FREE

WITH THREE CASES OF CLIMAX BAKING POWDER...ANY SIZE...NO ADVANCE IN PRICE

SEND US YOUR ORDER OR ASK OUR SALESMEN TO SHOW YOU LARGE CUT OF SCALE

The Three Cases, including the Scale, will cost you but little over one-half the price of the Scale.

Climax Baking Powder guaranteed to comply with the Pure Food Laws of all States.

PACKED AS FOLLOWS

6 doz. ¼-lb. cans, at 45c. per doz., $2.70 per case.

3 doz. ½-lb. cans, at 85c. per doz., $2.55 per case.

2 doz. 1-lb. cans, at $1.60 per doz., $3.20 per case.

This Scale is made on entirely new principles, of the best materials, with diamond steel roller bearings. Is sensitive enough to weigh the finest drugs. No adjusting of weights or poises. The computing dial enables you at a glance to tell exactly how much to weigh out of any commodity for a given amount of money, saving annoyance of mistakes and loss of time in figuring. Every Scale Warranted Accurate.

An Ellinckhuysen-Style Dutch 3-Coin Rocker Balance?

BY MICHAEL FOSTER

The author was recently sent photos of sovereign balances from the collection of Eric and Judy Soslau, by Jan Berning, editor of *Equilibrium*. Jan knows that I have been working on a book entitled *Sovereign Balances – British Rockers and Their Markings*. I appreciate seeing and identifying unnamed and unlabelled sovereign balances based on the maker marks that I have been documenting.

One of the balances was not a sovereign balance, but an unusual 3-coin rocker similar to the 3-coin rocker in the Dutch Royal patent no. 427, granted to H.D.L. Ellinckhuysen of Rotterdam, in 1829.

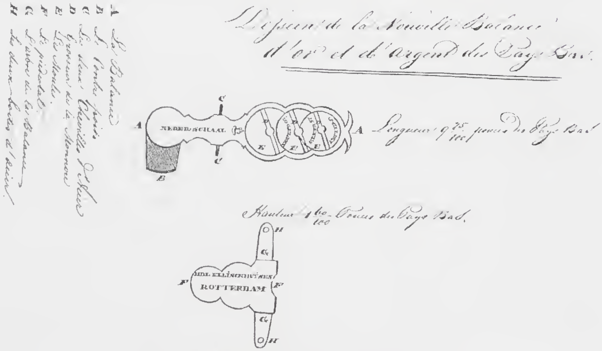

A La Balance
B Le Contre poids
C Les deux Chevilles d'acier
D Grosseur de la Monnoie
E Le Moule
F Le piedestal
G L'arbre de la Balance
H Les deux bouts de l'acier
Dessein de la Nouvelle Balance d'or et d'argent des Pays Bas.
A
NEDERL SCHAAL
C
C
B
D
E
A
Longueur 9 75/100 pouces des Pays Bas
Hauteur 1 60/100 Pouces des Pays Bas.
H
G
H.D.L. ELLINCKHUYSEN ROTTERDAM
F
F
G
H

Figure 1. H.D.L. Ellinckhuysen Dutch Patent of 1829.

The new rocker is missing the two-horn finial and is unmarked and unlabelled. On closer inspection it also has a different shaped beam and base. Was this rocker for testing Dutch coins or perhaps a different set of European coins? If for Dutch coins, was this rocker made by Ellinckhuysen?

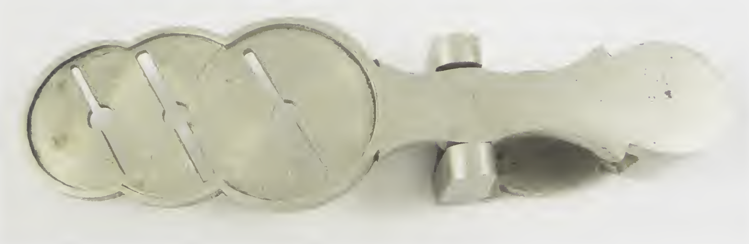


Figure 2. Top view of 3-coin rocker.

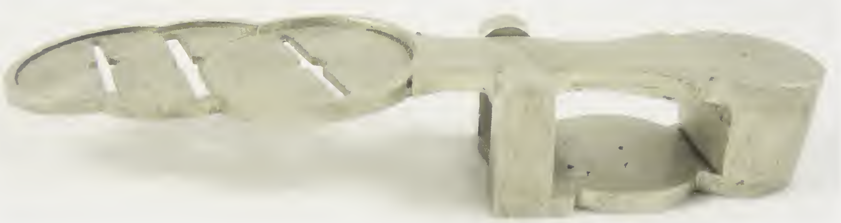
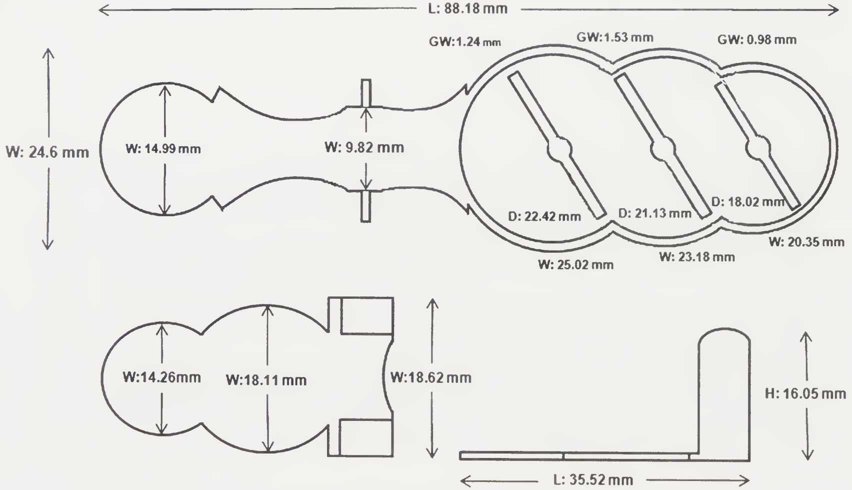


Figure 3. Side view of 3-coin rocker.

The author contacted the Soslaus to request the measurements of the rocker, particularly the platter diameters and gauge slot widths. The Soslaus provided the measurements that follow in the author's Drawing 1:



Drawing 1. Measurements of 3-coin rocker.

I also contacted Ritzo Holtman, editor of *Meten & Wegen* the Dutch quarterly journal on scales, weights, and measures (www.gmvv.org), to see if the rocker was a recorded variant by Ellinckhuysen.

Ritzo hadn't seen the rocker before. He provided information on the specifications of the Dutch 10 and 5 Gulden gold and the 25 Cent silver coins, Table 1.

Table 1. Dutch Coin Specifications.

DUTCH COIN	YEAR	WEIGHT gm.	DIAMETER mm.	THICKNESS mm.
10 gulden (gold)	1818-48	6.7290	22.0	1.20
25 cent (silver)	1870-30	4.2300	21.0	1.50
5 gulden (gold)	1826-51	3.3645	18.0	1.00

The author has examples of German, Danish and French counterfeit coin detectors produced by makers like Philip Jacob Maul and others (the topic of another article) and is compiling his own table of European and British Gold coin specifications in the 19th century, some of which is included in Table 2:

Table 2: European and British Gold Coin Specifications

ORIGIN	COIN	YEAR	WEIGHT	PURITY	GOLD	GOLD	DIAMETER	THICKNESS
Britain	Sovereign	1817	7.9881	91.67	7.3224	0.2345	22.05	1.51
	Half Sovereign	1817	3.9944	91.67	3.6612	0.1177	19.3	1.00
Germany	20 Mark	1873	7.9650	90.00	7.1685	0.2304	22.5	1.4
	10 Mark	1873	3.9820	90.00	3.5838	0.1151	19.5	1.0
	5 Mark	1875	1.9910	90.00	1.7919	0.0576	16.0	0.8
Denmark	20 Krone	1873	8.9606	90.00	8.0645	0.2592	23.0	1.5
	10 Krone	1873	4.4803	90.00	4.0323	0.1296	18.0	1.2
Netherlands	10 Gulden	c. 1830	6.7290	90.00	6.0561	0.1947	22.0	1.2
	5 Gulden	c. 1830	3.3645	90.00	3.0281	0.0973	18.0	1.0
France & Belgium	20 Francs	c.1860	6.4516	90.00	5.8064	0.1867	21.0	
	10 Francs	c.1860	3.2258	90.00	2.9032	0.0933	19.0	

From Table 2 and the platter sizes and gauge widths shown in Drawing 1, the only gold coins that would appear to fit properly on the rocker are the Dutch 10 and 5 Gulden gold with the Dutch 25 Cent silver coins.

Ritzo provided measurements of known labelled H.D.L. Ellinckhuysen rockers to provide further comparison.

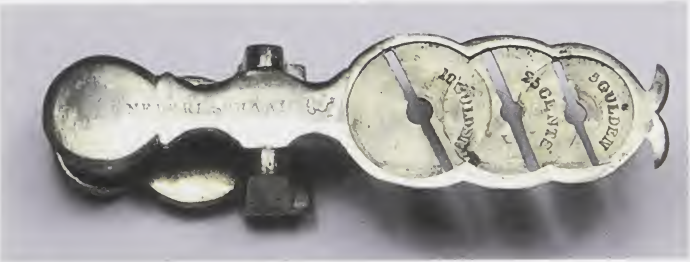


Figure 4. H.D.L. Ellinckhuysen 3-coin rocker.

Measurements taken on an Ellinckhuysen rocker similar to the one in Figure 4:

Table 3: H.D.L. Ellinckhuysen Rocker Measurements

PLATTER LABEL	PLATTER DIAMETER mm.	GAUGE SLOT THICKNESS mm.
10 GULDEN	22.05	1.20
25 CENTS	21.01	1.50
5 GULDEN	18.06	1.00

The result of all of this is that we appear to have a previously unreported Ellinckhuysen-style rocker, produced to test the Dutch 20 and 10 Gulden gold and the 25 Cent silver coins with a modified beam and base and without the two horn finial found on the known H.D.L. Ellinckhuysen rockers and in his patent drawing, Figure 1.

Could this rocker have been made by Ellinckhuysen? As Ellinckhuysen held the Dutch patent and the rocker appears to have been made to test Dutch coins it seems likely that it was made by Ellinckhuysen. Or is this a rocker made by another manufacturer for the Dutch market using a different style to attempt to avoid the patent?

Two other questions remain unanswered:

1. Is this rocker a prototype of a new version for the market that was never introduced or manufactured in any quantity?
2. Is it a blank new rocker version produced for a Retailer and the retailer labelling was never added?

The lack of any platter, beam or base labelling would be unusual on a British rocker unless the rocker was a prototype or made for a retailer.

Until a labelled example of this rocker comes to light the reader will have to draw his own conclusions from this information. If you have information to contribute or comments please contact the author at mikefoster500@gmail.com or by mail:

Michael S. Foster
P.O. Box 656 –Station Main,
Manotick, Ontario
K4M 1A6
Canada

Acknowledgements:

1. Eric and Judy Soslau, for making the rocker available and taking the requested measurements.
2. Jan Berning, for providing the photographs of the Soslau rockers.
3. Ritzo Holtman, for obtaining measurements of the H.D.L. Ellinckhuysen rocker for comparison.

Gross Misrepresentation

BY ROBERT MYERS and NORMAN BIGGS

The gross of 156 items.

The article Counting or Estimating? published in EQM 3687-3689 featured an Avery Model 345 estimating scale with a curious inscription: 156 ARTICLES TO THE GROSS. Since a gross was normally 144 items, the significance of this inscription was unexplained. By chance, while browsing through some old copies of the Inspectors' journal , the explanation has been found (Figure 1). The gross of 156 items was a device used by manufacturers in the needlemaking trade to increase the productivity of the workforce. Thus the suggestion made in the original article, that the scale must have been used for weighing very small items, is confirmed.

In December 1921 a version of Model 345 was the subject of a Board of Trade Notice, number 185. That version was based on the conventional gross of 144 items, and differed from the one described above in that only one item was placed in the pan.

Correction

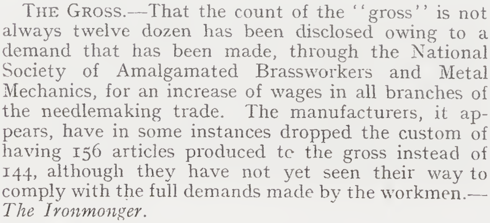
Some of the pictures in the original article were misplaced. We should like to make it clear that the error was not the fault of the Editor! The simplest way to put things right is to make the following corrections.

Caption to Figure 3 should be: Model 359 with 10:1 and 100:1 ratio pans.

Caption to Figure 4 should be: Model 156 as in the 1880 catalogue.

Caption to Figure 5 should be: Model 350.

Page 3688, lines 27 and 34, replace 'Figure 3' by 'Figure 4'. Page 3688, line 40, replace 'Figure 4' by 'Figure 5'. Page 3689, line 16, replace 'Figure 5' by 'Figure 3'.

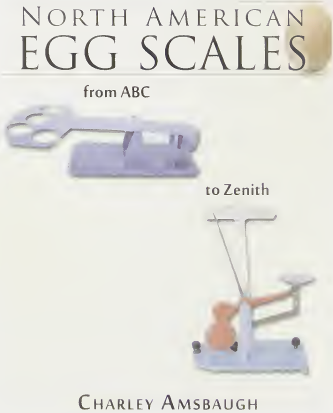


THE GROSS.—That the count of the ''gross'' is not always twelve dozen has been disclosed owing to a demand that has been made, through the National Society of Amalgamated Brassworkers and Metal Mechanics, for an increase of wages in all branches of the needlemaking trade. The manufacturers, it appears, have in some instances dropped the custom of having 156 articles produced to the gross instead of 144, although they have not yet seen their way to comply with the full demands made by the workmen.—*The Ironmonger.*

Figure 1. From the Monthly Review, April 1915, p.58.

Review

North American Egg Scales from ABC to Zenith by Charley Amsbaugh. Published 2011 by Ecko House Publishing (www.ECKOHousePublishing.com). ISBN 978-1-4276=5205-8. No page numbers. Color photographs. $29.95.



NORTH AMERICAN
EGG SCALES
from ABC
to Zenith
CHARLEY AMSBAUGH

This is clearly a labor of love. Mr. Amsbaugh describes the joy he has found in collecting egg scales following his first acquisition: *a beautiful Zenith I discovered in the Black Rose Antique Mall in Hanover, PA, a couple weeks before Thanksgiving in 2002.* This self-published book highlights the impressive collection that Mr. Amsbaugh has assembled since that first purchase.

The focus of the book is on American and Canadian egg scales. The book is organized alphabetically, as the subtitle suggests. Each egg scale is given a paragraph that includes the information that Mr. Amsbaugh was able to assemble about it. All in all there are some 78 different scales listed, some, of course, with a number of different models. Small color photographs are included for most of the scales listed. The discussion of the Zenith brand is particularly extensive covering various historical periods in the production of the scale. There is a short section of "frequently asked questions about egg scales," as well as "Tips for eBay Sellers."

As an egg scale collector for many years, I found the book informative and comprehensive. From the perspective of our very specialized niche, I found it helpful to have the listings for American egg scales consolidated into one location along with the illustrations. This has given me the opportunity to compare information and review my own collection. In some instances, I experienced a healthy "collector's envy" for egg scales that Mr. Amsbaugh has found.

I found the more extensively researched section on the Zenith Egg Scale history and the egg scale labels especially interesting and useful. More of this kind of research will be very welcome in future editions. I do hope that Mr. Amsbaugh publishes a second edition and that when he does he includes photos of the egg scales he has currently represented with drawings. I believe that in some cases those photos already exist. An example would be the Chatillon Egg Scale, which I have seen in another scale book. A call to other collectors would probably yield additional photographic material.

Overall, this publication is definitely worth purchasing, even though this soft cover edition is pricey.

BARBARA GRYGUTIS

The Lightning Postal Indicator

BY PETER LAYCOCK

Figure 1. Penny Black.

In May of 1840 the Penny Black postage stamp was introduced in the United Kingdom. Prior to that the cost to send a letter was determined by distance and the number of pages, the amount was to be paid for by the recipient which meant that the mailman had to personally collect from the recipient. Finding the recipient at home could require several visits and it was not uncommon for the recipient to refuse the letter as the predetermined postage was very expensive. With the introduction of the 'Penny Black' a reasonable universal rate based on weight (one penny for letters less than ½ ounce) paid by the sender was established for letter mail to anywhere in the United Kingdom. The reason why this is of interest to the scale collector is of course the sudden requirement for scales to weigh mail for post offices, businesses and homes. It was such a success that the amount of mail tripled in less than a year. Not long after, other countries followed with postage stamps of their own; in 1843 Brazil, 1847 USA and Mauritius, 1849 France and Belgium and by 1860 about 85 countries or other entities had issued stamps.

The next important development was the establishment of the Universal Postal Union (UPU). The UPU was created in 1874, initially under the name ***General Postal Union***; as a result the Treaty of Bern was signed on October 9, 1874. Four years later, the name was changed to *Universal Postal Union*. The UPU established that: 1) There should be a uniform flat rate to mail a letter anywhere in the world, 2) Postal authorities should give equal treatment to foreign and domestic mail and 3) Each country should retain all money it has collected for international postage. This change required each country to establish "Foreign Postal Rates" which were also determined by weight. With this development, the delivery of mail around the world was greatly facilitated.

With these two initiatives in place, the mail service around the globe expanded to include many other items: books, newspapers, catalogues, other printed material, merchandise and so on. In fact, by the 1880s it had grown to such an extent that determining the rate of postage required charts and manuals for the postal clerks to refer to as they tried to determine the correct amount of postage to charge.

It was with all this in mind that Julius Bittschofsky, an entrepreneur in Cleveland, Ohio, set about to develop a device that would facilitate this process. On January 26, 1889 he applied for a patent for a display card that he would eventually market under the name of "The

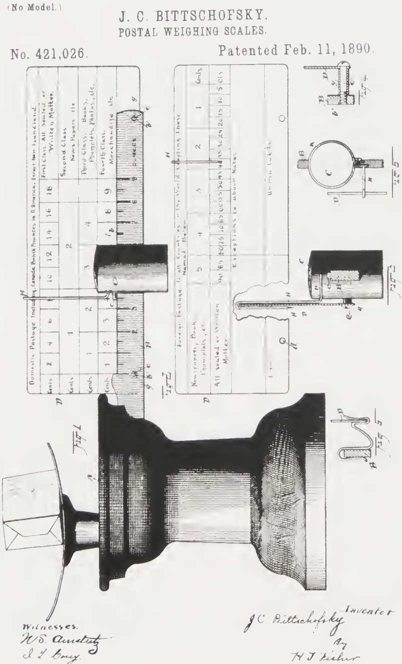
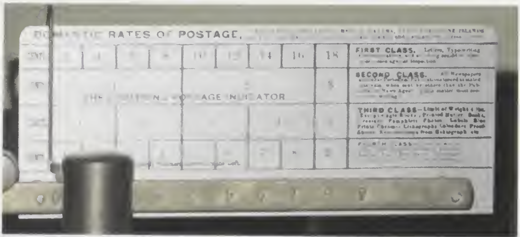
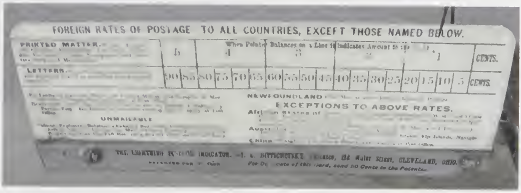


Figure 2. Patent # 421026.

Lightning Postage Indicator." Letters of Patent no. 421026 were granted February 11, 1890. In the specifications, he states, *The object of my invention is to economize time in ascertaining the exact amount of postage due in any given case, and to afford cheap, direct, and reliable means for this purpose. This is accomplished by attaching a postal-scale card to the beam itself and providing a pointer which tells the amount of postage due.* The card was attached to what appears to be a standard 9 ounce Howe Postage Scale as can be seen in the patent drawings. He further goes on to state, *It will be seen that with a scale-card thus arranged and classified and a pointer to denote the amount of postage required the question of the weight of the letter or package is really immaterial, and the eye goes directly to the scale-card and reads there in figures the information desired. There is no calculation, no delay, no mistake; the pointer tells all that is wanted to be known.*



Figures 3 & 4. ➶ ➶ Front (above) and back (below) views of the Lightning Postage Indicator.


FOREIGN RATES OF POSTAGE TO ALL COUNTRIES, EXCEPT THOSE NAMED BELOW.
PRINTED MATTER.
When Pointer Balances on a Line it indicates Amount to pay
5
4
3
1
CENTS.
LETTERS.
90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5
CENTS.
NEWFOUNDLAND
EXCEPTIONS TO ABOVE RATES.
UNMAILABLE
Africa
China
THE LIGHTNING POSTAGE INDICATOR. —J. C. BITTSCHOFSKY, Patentee, 114 Water Street, CLEVELAND, OHIO.

It is quite remarkable the amount of information put on the card. The card on the nine ounce scale measures 5¾ inches by 2¼ inches. On the front side is the "Domestic Rates of Postage," which includes rates for first, second, third, and fourth class mail and covers rates for all mailable material. On the back side is the "Foreign Rates of Postage" and basically covers printed matter and letters. As well, there are details covering "Unmailable" Items and "Exceptions to the Above Rates" for mail to Africa, Australia and China. The display card is held in place by a bent metal flange which is attached to the beam of the scale by two screws. On the flange is additional information, *'The Lightning Postage Indicator' – J. C. Bittschofsky, Patentee, 114 Water Street, Cleveland, Ohio.*

The Lightning Postage Indicator card has been found on a number of different Howe postal scales. The nine ounce appears to be the most common, examples are found in the Jim Dietrich and Ben Smith Collections. Also in the Smith collection are a 16- and a 32-ounce scale. The Lightning Postage Indicator on the 64-ounce Howe Postal scale is in the Berning collection. The rate cards on the larger scales have substantially the same information with additional rates

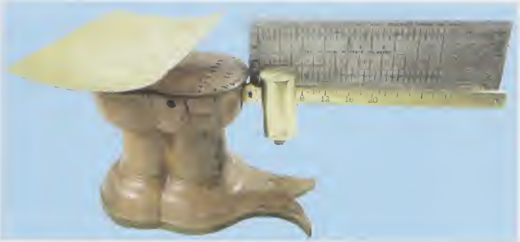


Figure 5. ➤➤ Howe 32 oz capacity scale with aluminum Lightning Postage Indicator.

Complements Ben Smith.

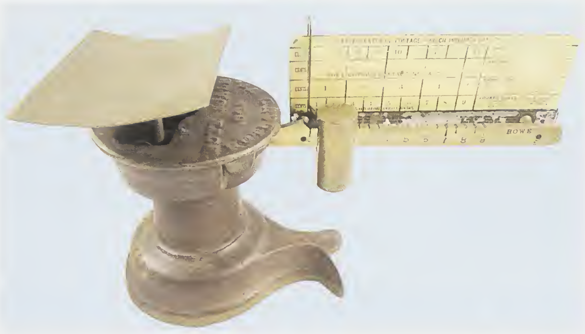


Figure 6. ◄◄ Howe 9 oz. capacity postal scale with celluloid Lightning Postage Indicator.

Compliments Jim Dietrich.

for the heavier items that they weigh. With the additional weight of the card being attached to the beam of the scale it becomes necessary to adjust it by adding lead shot to ensure that the scale comes into balance when the poise is set at zero.

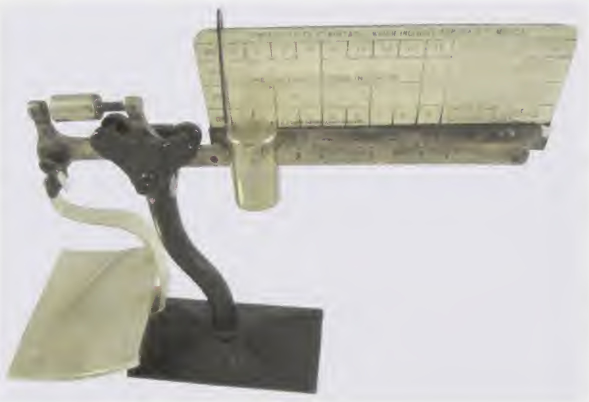


Figure 7. ►► Gem letter scale with 9 oz capacity and Lightning Postage Indicator.

Peter Laycock Collection.

There is another style of scale, the maker unknown but assumed to be Howe, that has incorporated the Lightning Postage Indicator. It seems as though the scale was made especially to accommodate this card. It is a nine ounce scale and is marked "GEM" on the base. I only know of two of these scales, one in the Judy & Eric Soslau collection and the other in mine. It was the unique nature of this little scale that prompted me to research and write this article. The letter tray is particularly heavy weighing just over 8 ounces. The scale is brought into balance when the poise is at zero by turning the small adjustment screw positioned above the tray. It is my assumption, that with a ready supply of Howe scales, that it was more economical to use them instead of expanding the availability of the "GEM".

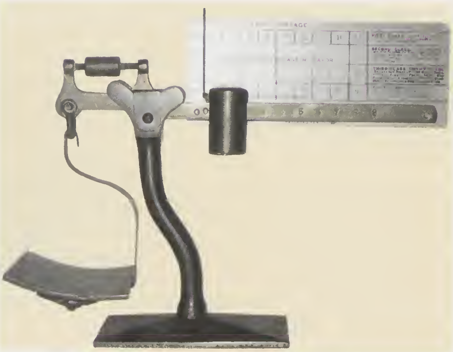


Figure 8. ◄◄ 9 oz capacity Gem Letter Scale with Lightning Postage Indicator and original cast iron pan.

Compliments Eric & Judy Soslau.

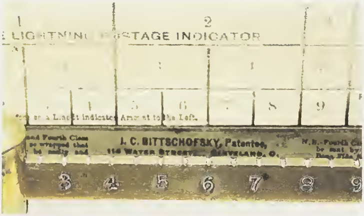

LIGHTNING POSTAGE INDICATOR
Amount to the Left.
J. C. BITTSCHOFSKY, Patentee,
114 WATER STREET, CLEVELAND, O.

Figure 9. Lightning Postage Indicator showing Bittschofsky as Patentee.

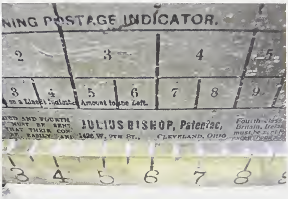
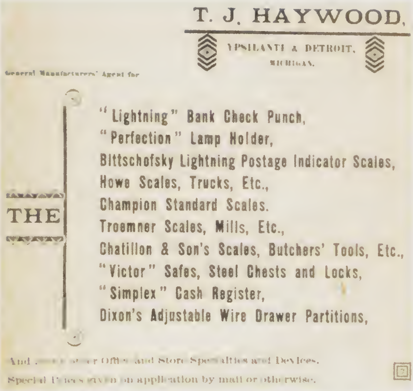


Figure 10. Lightning Postage Indicator showing Bishop as Patentee.

An interesting side bar is the fact that there are two different claims for the patent rights. The first being J. C. Bittschofsky and the second Julius Bishop. Of the eight scales I studied, four identify Bittschosky as the patentee and the other four Bishop. I believe that the Bittschofskys predate the Bishops. The display cards for the 9-ounce Bittschofsky scales are made from an opaque celluloid, the Bishops have a metal, probably tin display card. As well, there appears to be a more detailed text on the Bishops which might indicate an upgrade from earlier models. As you would expect, the size of the card increases with the capacity of the scale. They range in size from 5¾ by 2¼ inch on the 9-ounce scale up to 10½ by 2¾ inch for the 64-ounce scale.

Little is known about these two, however they may indeed be the same guy. It is possible that Bittschosky changed his name to Bishop, they both have the same first name Julius. Bittschofsky's address is 114 Water Street, Cleveland and Bishop's is 1426 W. 9th Street, Cleveland. Both claim to be the Patentee for Patent No. 421026. In the 1900 Cleveland Directory, I found the following "Julius Bishop mngr. Howe Scale Co., 114 Water Street". It seems like more than just a coincidence as both, at one time or another worked from the same address.



T. J. HAYWOOD,

YPSILANTI & DETROIT,
MICHIGAN.

General Manufacturers' Agent for

THE

"Lightning" Bank Check Punch,
"Perfection" Lamp Holder,
Bittschofsky Lightning Postage Indicator Scales,
Howe Scales, Trucks, Etc.,
Champion Standard Scales.
Troemner Scales, Mills, Etc.,
Chatillon & Son's Scales, Butchers' Tools, Etc.,
"Victor" Safes, Steel Chests and Locks,
"Simplex" Cash Register,
Dixon's Adjustable Wire Drawer Partitions,

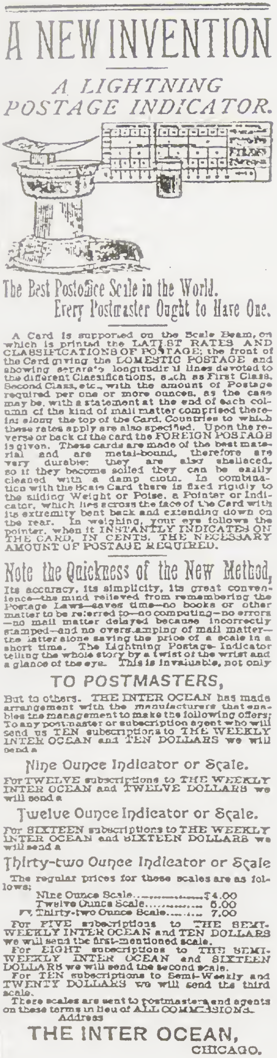
And [illegible] other Office and Store Specialties and Devices.

Special Prices given on application by mail or otherwise.

Figure 11. T.J. Haywood featured the Bittschofsky Lightning Postage Indicator on line 3 of their 1902 advertisement in the Ypsilanti, MI City Directory.

In trying to establish a time frame as to when these scale may have been available, we know the following: 1) The patent was granted in February 1890, 2) There is a reference to Julius Bishop managing the Howe Scale Co. in Cleveland in 1900. 3) Bittschofsky Lightning Postage Indicator was advertised in the *Daily Inter Ocean*, a Chicago newspaper, dated Dec 24, 1890. 4) "Bittschofsky Lightning Postage Scales" are advertised by retailer "T. J. Haywood, Ypsilanti & Detroit" in the 1892 *Ypsilanti City Directory*. It looks like they were available for at least ten years.

With this mystery still somewhat unresolved further investigation was required. Eureka! It turns out that Bittschofsky and Bishop were indeed the same fellow. It is my assumption that he changed his surname to one that was easier to pronounce and remember and more suited to the ethnic mix of Cleveland. We find in the 1870



A NEW INVENTION

A LIGHTNING POSTAGE INDICATOR.

The Best Postoffice Scale in the World.
Every Postmaster Ought to Have One.

A Card is supported on the Scale Beam, on which is printed the LATEST RATES AND CLASSIFICATIONS OF POSTAGE; the front of the Card giving the DOMESTIC POSTAGE and showing separate longitudinal lines devoted to the different Classifications, such as First Class, Second Class, etc., with the amount of Postage required per one or more ounces, as the case may be, with a statement at the end of each column of the kind of mail matter comprised therein; along the top of the Card, Countries to which these rates apply are also specified. Upon the reverse or back of the card the FOREIGN POSTAGE is given. These cards are made of the best material and are metal-bound, therefore are very durable: they are also shellaced, so if they become soiled they can be easily cleaned with a damp cloth. In combination with the Scale Card there is fixed rigidly to the sliding Weight or Poise, a Pointer or Indicator, which lies across the face of the Card with its extremity bent back and extending down on the rear. In weighing, your eye follows the pointer, when it INSTANTLY INDICATES ON THE CARD, IN CENTS, THE NECESSARY AMOUNT OF POSTAGE REQUIRED.

Note the Quickness of the New Method,

Its accuracy, its simplicity, its great convenience—the mind relieved from remembering the Postage Laws—saves time—no books or other matter to be referred to—no computing—no errors—no mail matter delayed because incorrectly stamped—and no overstamping of mail matter—the latter alone saving the price of a scale in a short time. The Lightning Postage Indicator telling the whole story by a twist of the wrist and a glance of the eye. This is invaluable, not only

TO POSTMASTERS,

But to others. THE INTER OCEAN has made arrangement with the manufacturers that enables the management to make the following offers: To any postmaster or subscription agent who will send us TEN subscriptions to THE WEEKLY INTER OCEAN and TEN DOLLARS we will send a

Nine Ounce Indicator or Scale.

For TWELVE subscriptions to THE WEEKLY INTER OCEAN and TWELVE DOLLARS we will send a

Twelve Ounce Indicator or Scale.

For SIXTEEN subscriptions to THE WEEKLY INTER OCEAN and SIXTEEN DOLLARS we will send a

Thirty-two Ounce Indicator or Scale

The regular prices for these scales are as follows:

Nine Ounce Scale.................$4.00
Twelve Ounce Scale................5.00
Thirty-two Ounce Scale...........7.00

For FIVE subscriptions to THE SEMI-WEEKLY INTER OCEAN and TEN DOLLARS we will send the first-mentioned scale.

For EIGHT subscriptions to THE SEMI-WEEKLY INTER OCEAN and SIXTEEN DOLLARS we will send the second scale.

For TEN subscriptions to Semi-Weekly and TWENTY DOLLARS we will send the third scale.

These scales are sent to postmasters and agents on these terms in lieu of ALL COMMISSIONS.

Address

THE INTER OCEAN,
CHICAGO.

Figure 12. ◄◄ The advertisement from Chicago's *Daily Inter Ocean* of Dec. 24, 1890 reads in part: The Best Postoffice Scale in the World. Every Postmaster Ought to Have One. A Card is supported on the Scale Beam, on which is printed the LATEST RATES AND CLASSIFICATIONS OF POSTAGE; the front of the card giving the DOMESTIC POSTAGE and showing longitudinal lines devoted to the different Classifications, such as First Class, Second Class, etc., with the amount of Postage required per one or more ounces, as the case may be, with a statement at the end of each column of the kind of mail matter comprised therein: along the top of the Card, Countries to which these rates apply are also specified. Upon the reverse or back of the card the FOREIGN POSTAGE is given. These cards are made of the best material and are metal-bound, therefore are very durable: they are also shellaced so if they become soiled they can be easily cleaned with a damp cloth. In combination with the Scale Card there is fixed rigidly to the sliding Weight or Poise, a Pointer or Indicator, which lies across the face of the Card with its extremity bent back and extending down on the rear. In weighing, your eye follows the pointer, when it INSTANTLY INDICATES ON THE CARD, IN CENTS, THE NECESSARY AMOUNT OF POSTAGE REQUIRED.

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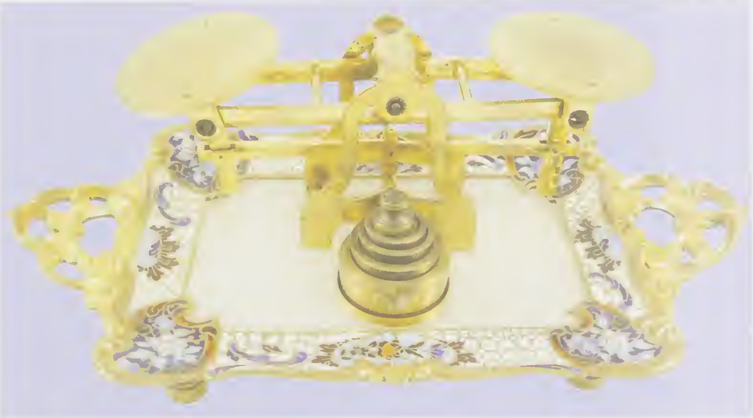
Census for Cleveland that Julius Bittschofsky was born in 1863. He was the third child of four of Charles and Caroline Bittschofsky who had imigrated to the United States from Prussia. His father Charles was a 'News Agent'. In the 1880 census, Julius now age 17 is listed as a Clerk in a store, probably his fathers news agency. In January of 1889 it is reported Julius Bittschofsky and his wife Ida had given birth to a son Julian. The 1900 census lists Julius Bishop (note the name change) at age 37 as Manager of the Howe Scale Co. By this time he and his wife Ida age 32 had two children Russell (born January 1889) and Lillian (born May 1893). Both the 1910 and 1920 censuses report that he is still Manager of the Howe Scale Co. The 1910 census also lists his son Russell by age 21 as working as a 'repair man, scale works.' Some time between 1910 and 1920 the Bishops had moved to Pittsburgh. Finally the 1930 Pittsburgh census lists Ida Bishop at age 62 as a widow which would indicate that Julius Bittschofsky/Bishop had died.

In any event a marvelous idea. However, I believe that "The Lightning Postage Indicator" was relatively short lived as other scale makers found ways to incorporate all the rate information they needed on the face of their scales.

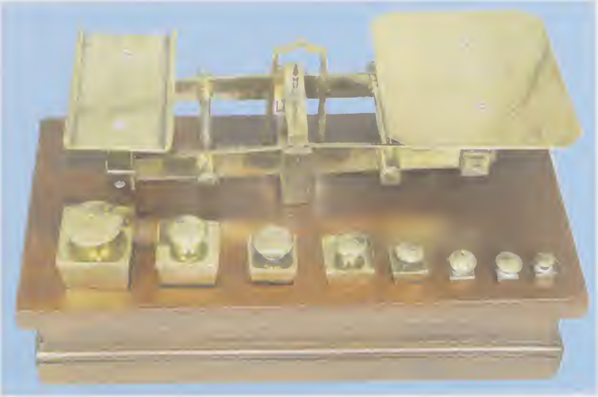
Thanks to Ben Smith, Eric Soslau, Jim Dietrich, Jan Berning and Steve Beare for providing pictures and other information that greatly helped in the writing of this article.

Showcase



This Mordan scale is made from gilded brass with an elaborate enameled tray that has an alabaster base insert.

Larry Press Collection



This large encased roberval was manufactured by J. & E. Ratcliff and is marked on the letter plate Waterlow & Sons, Manufacturers, London, the retailer who was a stationary manufacturer. Inset in its base is a set of 8 square knobbed brass weights numbered 8 oz (16P, 4 oz 8P, 2 oz 4P, 1½ oz 3P, 1 oz 2P, ½ oz 1P, 1 3oz and ¼ oz that are tapered toward the bottom. The base is made of fine mahogany measuring 10¼" by 5" and the scale measures 5" in height.

Peter Laycock Collection

Number 128 **November 2011**

ISASC

INTERNATIONAL SOCIETY OF ANTIQUE SCALE COLLECTORS

A Balanced View

As 2011 comes to a close, I would like to especially thank the officers for their outstanding work. We also have had many members take responsibility for several projects. Thank you for all the volunteer services you as members provide to the Society. That is why ISASC is such a great organization. We look forward to the continued support and additional participation by dedicated scale and weight collectors.

A little reminder that you should have received the Benefactor and Endowment Programs request. Your continued contributions to these important programs provide stability to the organization, so hopefully you will support them with your tax deductible donation. There are some changes in the membership dues notice which you may have or will shortly receive. Please review it carefully, as there are some new payment options, and information about a drawing for free membership.

The Scoop on the Regional Meetings

All three regional meetings were well attended and everyone enjoyed the camaraderie. For those of you who were not able to attend, here are the recaps. For more details and pictures go to www.isasc.org and click on Events/Regional Meetings. Meetings are being planned for next year with locations and dates to be announced.

Donna Schoenly sent the following summary of the **Midwest Weigh-In**: On a beautiful summer day, 14 "Scalies" gathered at the Schoenly home to see, talk and learn about scales and various other antiques. In addition to scales, there was an abundance of lighting devices, pharmacy items, ice cream scoops and all kinds of kitchen gadgets that the

Schoenlys have collected over the years. For "Show and Tell" Mary Easton brought a measuring tool that was used to make different size "bullets". Kurt Beyreis brought his recently purchased Dayton Computing Scale. Patent dates for the scale were 1887. 1898 and 1902. It was made of cast iron and brass and computes prices of goods 5 cents to a dollar per pound. Jan Berning busied herself taking pictures of Don's unusual scales for her next book. Hurry, Jan, we all want to see and learn more about scales! A few scales and weights were for sale and several people increased the numbers in their collections. But most of all, everyone seemed to enjoy each other's company and "talk" about SCALES.

The **Michigan Get-Together** report was dispatched by Donna Schoenly: September 17th was a glorious weather day for Jim Dietrich's scale gathering in St. Charles, MI. Although the temperature was on the cool side, 27 people enthusiastically "showed up" to look and learn about scales, and enjoy friendships, new and old. Everyone was really delighted to see our past president, Peter Laycock. Jim's scale collection is one of a kind. Every type of scale imaginable is housed somewhere in barns and trailers, and he doesn't have just one example of a type of scale. I saw at least 12 egg scales that looked the same, but had slight variations, i.e., color or egg size. That is just one example—there were many more too numerous to mention. My favorite scale, however, was a pitch fork that had a scale in the handle for weighing, but to my dismay there was only one. All we can say Mr. Dietrich is WOW!

Steve Beare sent his account of the **Mid-Atlantic Scale Summit**: On the last Saturday in September. timed to coincide with a rained out Renningers Kutztown Antique and Flea Market Extravaganza Weekend. eleven scale-obsessed souls convened at the Katz's home near Downingtown, PA, for a gathering of scale talk, attempts to fix the government, great food and fellowship. Despite the rain, several attendees were able to pick up great scales at the Katz's indoor booth at Adamstown, so collections were further enhanced and pocketbooks made thinner during the weekend, which is the continuing goal of any collector.

Election of Officers

Enclosed is the ballot for election of board members. Please vote and return the ballot in the envelope provided at your earliest convenience. Bill James has agreed to seek another term as Vice-President in charge of convention oversight. Cliff Lushbough was appointed last year to fill the unexpired term left vacant when Bob Jibben took over as President. He is now nominated for election for a complete three year term. Since coming on the board he has taken on the responsibility of EQM related issues. Kurt Beyreis is standing for election for a second term as Treasurer.

Dues Notice in the Mail

Shirley Schmidt, our Membership Chair, reports that you should be receiving your dues renewal for 2012. You will notice a big change in that we are now offering for the first time multiple year memberships in response to requests from our members. Members will have the option of one year, two year or three year memberships. The two and three year memberships are offered at a slight discount. We are continuing to accept payments through PayPal as we feel this is a great convenience. Members will have the choice of paying their dues via PayPal or check. If using PayPal there is a small additional fee to cover the PayPal charge to the Society. We encourage everyone, whether paying by check or by PayPal, to pay their dues as soon as possible for the benefit of all.

We are again offering a bonus perk for early renewal. If you pay your dues prior to December 16, 2011, you will be entered in a drawing for a chance to win a one year membership for the year 2013. Two of these memberships will be given away. Shirley would like to remind anyone paying by PayPal that you can email any Membership Directory updates to her at jasmidt@avci.net .

To pay your dues online go to www.PayPal.com and pay to the account of usaisasc@gmail.com and identify as 2012 dues in the message section. Thank you in advance to all who make this process a little easier and lighten the load on those who volunteer to take on this important and necessary task.

Work Continues On the ISASC Collection

A lot has been happening in Pittsburgh these days to get the ISASC Collection ready to show at the convention next May. Mary Anne Murphy, our Collection Development Chairperson, reports the August and September work sessions were very productive and the move into the new display/storage unit is now complete. This could not have been accomplished without the hard work of Steve and Kathy Barnett, Kurt and Ann Beyreis, Les and Elaine Firth, Jerry and Mary Katz, Bryan Negrini and Bob Jibben. We applaud them all!

The collection donated by Pat Kelly is now completely unpacked, processed, sorted and displayed. It addition, the final batch of the Aaron Traum donation was processed, as well as more from the Chuck Lamlein Collection. Dale and Don Goldman sent a large box of ephemera that has been sorted and processed. They are also donating four framed advertisements that are too expensive to ship and so will be driven to Pittsburgh by Jack Young when he comes for the convention.

We are extremely pleased to announce two new major donations, the Norman Cima Collection and the John Schott Collection. Bill James and Bill Doniger assisted Norm in selecting his most valuable scales and documenting them. Kurt and Ann Beyreis went to California at Norm's expense to review the balance of the collection and assisted in packing the pod that was sent to Pittsburgh, again at Norm's expense. Special thanks to Bill James who procured the packing materials and helped pack and load. The Schott Collection, that many of you saw at the Kansas City Convention, is presently being packed and shipping arrangements made. We need a few folks who can go to Kansas City to help Barbara Schott pack up scales and load. If you can help, please contact Bob Jibben who is heading up this project at [redacted] or by phone 612-925-1386. It is gratifying to realize that the ISASC Collection is being built by the volunteer efforts of so many.

The project of selling duplicates in small groups via auctions in various locales continues. Thanks to Les Firth, Jerry Katz, Don Schoenly, Bob Jibben and Kurt Beyreis, who have or are in the process of setting up these auctions. Emails will be sent out as we get the information on when and where the auctions will be held. If anyone is interested in arranging an auction in their local area, please let us know. Mary Anne is planning on getting started on the fund raising project very soon. She is hoping to get additional volunteers, so if anyone has thoughts about that, or knows someone who has done fundraising, please let her know.

We are putting together a history of the development of the collection and need photos. If you have photos taken while visiting the collection or if you have donated scales or scale related items and have a photograph of yourself that we could use, please send them to Mary Anne via email or regular mail. One more work session is anticipated before the end of the year. If you can help or have any questions please contact her at [redacted] or by phone 412-321-5947.

In reviewing all that has happened over the past few months, Mary Anne expressed her gratitude to those who have helped, "I think we are going to have something very special to show the members at the convention in May. Bryan sent me some photos he took of the old unit. It was very impressive, but also made it clear how far we have come. Thank you all for your interest and your efforts on behalf of the Collection."

Interested in Giving a Gift Subscription?

We often ask you for ideas to boost membership. Recently member Howard Cheifitz gave us a suggestion, and after discussing it, we are going to give it a try. We are offering current members the opportunity to send a one year gift subscription of Equilibrium to their friends and family. It is a great gift idea and a novel way to spread the word about ISASC. Most of us probably know one or two people who have at least a passing interest in scales, weights and measures. Getting a year's subscription to Equilibrium may spark an interest in collecting and/or becoming a member even if to just keep getting EQM. You can send a one-time gift subscription to anyone of your choice in the US or Canada for only $25.00. If interested contact Membership Chair Shirley Schmidt at [redacted] or phone 810-376-4438.

Publicity for ISASC

You may remember that our Membership Chair Shirley Schmidt, at the urging of member Bob Foster, gave the *Farm Collector* three agriculture related scale articles from EQM to include in their publication. The first of these articles, written by Les Firth on milk scales, appeared in the November 2010 issue. The second article, written by Bob Jibben about egg scales, was published in the May 2011 issue. The third article, *Meloney Automatic Registering Milk Scale* by Utz Schmidt, has just been published in the October 2011 issue. EQM Editor Jan Berning helped with getting the text and related pictures to the editor at *Farm Collector.* All three of the articles have been given an eye-catching layout in their magazine. The inclusion of a short paragraph mentioning EQM and ISASC with our website address is great exposure for our Society. Thanks to everyone who helped make this possible.

Proven Results

EARLY DAIRYMEN DEPENDED ON MELONEY AUTOMATIC REGISTERING MILK SCALE FOR PRODUCTION DATA

Robert Jibben, collector, with two early Jiffy Way egg scales The orange one is quite rare

We are also excited to let you know about some more excellent publicity for scale collecting. *Old Times*, a monthly newsmagazine which promotes antiques and collectibles in the upper Midwest, has published an article highlighting our President Bob Jibben and his collection in their October 1, 2011, issue. The magazine's cover features Bob holding two Jiffy-Way egg scales with more of Bob's scales in the background. You can view the entire issue online at no charge by going to www.theoldtimes.com. The article is accompanied by photographs of many great scales from Bob's collection. Weigh to go, Bob!

Meet Our Members

Bob Foster has been a member of ISASC since 1993 and gives us this update: This summer he set up a scale display at the Northern Nevada Antique Power Club annual tractor and engine show. This display was of 40 scales of all different types and uses. While at the show he passed out rack cards and listened to and told scale stories. He set up a British person scale that weighed in stones. The kids and men enjoyed weighing in stones, but the ladies were somewhat reluctant to step on the scale. One postal worker offered to send Bob a couple of scales, and her husband planned to send some weights. Bob is standing by the display stand that he built for about 100 scales.

Steve Ginsberg, a long-time member and past Vice President of ISASC, forwarded the following: The question always comes after telling people our interest in collecting scales, "You collect antique scales, how did you start collecting something like that?" Well, I was admiring one in a shop and thought that if we were ever going to start a collection, scales would be a neat thing to collect. I like mechanical devices and the fact that they actually work and not something that you can just admire. Before long we had three, then 30. A dealer we had found told us that we should join this group called ISASC. I was kind of surprised to hear that there was such a group and we joined in 1985. Up to this point we had collected what most would call the "run of the mill" scales. We had plants hanging from spring balances and candy filled the scoops of several counter scales. Everything we had was fairly big and we didn't have that much room for them. Then we attended the ISASC convention in 1986 in Washington, DC. It was there that we really became "collectors". We watched Bob Stein pull about 70 postal scales from his sport coat pockets during a talk he was giving. Until then we didn't even know that scales came that small. Then we had the opportunity to see other member's albums. It opened our eyes to the variety of scales that there were to collect.

From there our collection grew to about 300 until circumstances required that we cut back. Right now we have about 150 of our most prized scales. Over the years we met some really great people and have had many enjoyable experiences as members of ISASC. We moved from the Boston area 6 years ago, and currently live just outside of Charleston, SC. Come visit if you're in the area. Steve and Rita Ginsberg

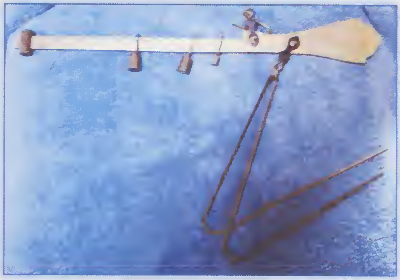
Welcome New Members

It is always a pleasure to see new people choosing to join our enthusiastic members who collect scales, weights and measures. We are hoping to meet you in person at one of our various meetings. Please take advantage of the services of the Society, and don't hesitate to ask questions of other members.

Rich and Lauri Kunze	Jefferson, OR
Patrick Skidmore	Ringgold, GA
Debra Ewanciw	Rahway, NJ
Ron and Pam Bledsoe	Chicago Park, CA

For Trade

Member Jack Williams reports that he has for trade a Fairbanks Paper Sampling scale. The scale was found in a 1927 Fairbanks scale catalog where it is described as follows: "These beams are used to determine the number of pounds per ream by weighing of a single sheet. The beam is notched and graduated: front side 160 x 1 lb., with heavy poise; back side, 40 x 1/4 with light poise: one set poises for 480 and 500 sheets per ream". It is complete with all four poises as pictured here. You can contact Jack by email with photos of your proposed trade at smalllwj@yahoo.com.



We look forward to 2012 with the activities already planned, especially the convention in Pittsburgh, May 17-21, where several scale collections will be on display. Be sure and use the website managed by Carol Hayden for current information on ISASC.

Robert Jibben

Robert Jibben
President ISASC